The magazine for AUSTRALIAN AMATEURS

June 2004
Volume 72 No 6

WIRELESS INSTITUTE OF AUSTRALIA

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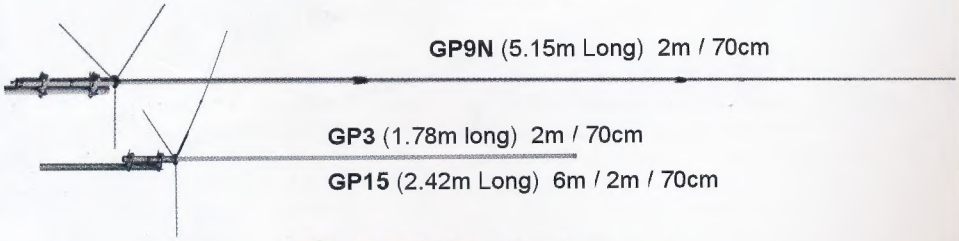
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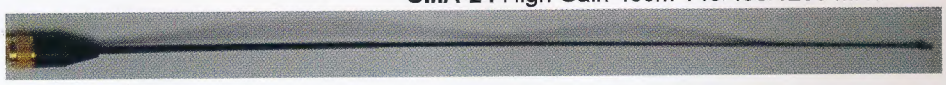

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Our Cover this month

The Doug McArthur VK3UM responds to a challenge. He poses here with his dish designed to receive signals from Mars. See story page 8

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Founded 1910

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The Australian Amateur Radio Service

Member of the
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Editorial Comment

Colwyn Low VK5UE

At last. A National WIA

The new dawn of the WIA has arrived. At the conclusion of the Federal Convention on 16th May 2004 the constitution for a national Wireless Institute of Australia was accepted and implemented.

Now we can truly say that the WIA is an Australian National Institute.

Like all new organisations, formed from previously federated bodies, there are a number of procedural processes to be gone through, but the benefit to Amateur Radio in Australia will be immense.

One thing we as members will see will be the transfer of our membership from a Division to the National body. This will be quite seamless, but we will have to formally accept membership in the National WIA. This will be processed when our current Divisional membership comes up for renewal.

The day-to-day things will not change the repeaters will still operate and the clubs will still meet.

A copy of the new constitution as adopted by the WIA Federal Convention is enclosed with members mailed out copies. Others can request a copy from the National WIA Office in Melbourne or read it on the National WIA web site www.wia.org.au. Also see WIA comment in this issue.

I am glad we now have an opportunity to progress Amateur Radio in Australia on a National basis for the good of all Australian Amateurs and ask you all to support the National body.

Amateur activity

With the winter setting in some of our outside activities will be curtailed. I do hope you have done all the necessary maintenance on your aerial systems, as there is nothing worse than having to take antennas down and handle cold metal in the wind and rain. We also have the chance to sit in the warm and talk to friends catch up on recent events and plan the next project.

I have been caught up in some of this with my WICEN commitment to support the Coopers Pale Ale Rally of SA. This is a dirt road rally similar to those run in other states and also supported by WICEN. Making sure all the gear works is important. This is best done by having a trial run away from home base. This ensures we have all the microphones, patch leads, aerials clips, power distribution boards , guys and pegs, etc. When I worked in a trials environment we had check lists for even the simplest activities because in the pressure of doing the real job you could easily miss an important action or forget a necessary piece of equipment, which "Some One" should have done or brought. A list made at a practice is a necessity. Ask any DXpedition organiser. The one thing I find useful in these circumstances is to start with an empty tool box and every tool I use is put in this box as it is used. Then you add those might be useful items at the end.

Remember–hobbies for relaxation and enjoyment!

73 Colwyn

Michael Owen VK3KI, 1st President of WIA National

Michael Owen VK3KI has been licensed for over 40 years, has been a member of the VK3 Division Council, and its Federal Councillor. He became a member of the Federal Executive, and was Federal President at the time the federal body was incorporated, having been largely responsible for writing the constitution. He has been a WIA delegate to a number of Region 3 Conferences, and was a Director of Region 3 for many years. He was IARU Vice President for 10 years until 1999. He was the Chairman of the IARU committee responsible for formulating the global policy in respect of Article 25, the international regulations governing the amateur services. He represented the IARU at the Special Committee on Regulatory /Procedural Matters, Geneva, July 2 to 12, 2002. and was a member of the IARU WRC 2003 observer team, responsible for coordinating Article 25 matters. By profession he is a lawyer, until 1997 a partner in Corrs Chambers Westgarth, was resident partner in London for 6 years from 1988, and more recently has been General Counsel for Quiksilver.

Michael Owen VK3KI

The National Society for Australian Radio Amateurs

On Sunday afternoon, 16 May 2004, the Federal Council of the Wireless Institute of Australia made one of the most important decisions it has made for many years when it passed a special resolution that adopted a completely new Constitution for the WIA.

The Federal Council comprised the representatives of the 7 Divisions, which were the 7 members of the WIA. The federal body of the WIA was a federation of state organisations, with the federal body having primary responsibility for representing Australian amateurs at a national and international level.

The Federal Council "was", because with the adoption of a new Constitution it no longer exists, and a new, single, national WIA is created by the new Constitution.

Every individual is now entitled to become a member of the single WIA. The existing members of the Divisions are Provisional Members of the national WIA, and when they are next invited to renew their membership, they will be able to renew it as a member of the national WIA.

The new company is structured on very simple lines, with a board of 7 directors, the first board appointed for two years by the Constitution, thereafter the directors will be elected for two year terms, with half retiring each year.

Elections will be by postal ballot, and every member will be entitled to vote.

The new board is as follows:

Michael Owen	VK3KI, President
Ernie Hocking	VK1LK, Vice President,
Glenn Dunstan	VK4DU
Trevor Quick	VK5ATQ
Ewan Mcleod	VK4ERM
Ted Thrift	VK2ARA, and
Phil Wait	VK2DKN.

Peter Naish continues as Secretary, and David Pilley continues as Treasurer.

A couple of the Divisions are still considering how to manage their interests, but others are clear what they wish to do, and the national WIA will have the responsibility of ensuring that the services that members are used to at a local level continue to be available.

We are going though a period of transition, and the directors and officers and the WIA office are now very busy struggling to come to grips with the new structure.

The new Constitution is available on the Institute's website.

There are 5 categories of membership, and with the same fee all across Australia.

The categories and subscription rates are:

Member	$75
Overseas Member	$85
Concession Member	$70
Member – No magazine Member	$50
Honorary Life Members	

A Concession Member is either a person holding a Pensioner Health Benefits Card or a full time student.

Because the WIA is a company limited by guarantee, each member undertakes to contribute up to $20 to meet the debts of the Institute, if the company is wound up and the member is called upon to make a payment. So, members on renewing their membership after 1 July 2004 will be asked to sign and return a form with their subscription. Even though the amount is very small, that is the formality that is required as it is the members guarantee that limits the company, the requirements of the Corporations Act for this type of company, the type that has been used for many years for these purposes and the type of company that is allowed to have a name that does not include the word "Limited".

This is a dramatic move. Why? The WIA has over recent years suffered as many national radio societies have suffered, with a dwindling and ageing amateur population and declining membership.

I am told that in 1990 some 41% of all licensed amateurs were members of the WIA. Today the figure is around 27%.

But while there are threats, there are opportunities. The removal of the Morse requirement for HF may make amateur radio more attractive. A new entry-level licence may attract new amateurs, particularly younger amateurs. The increasing awareness of the shortage of trained radio technicians, and the perception of amateur radio as one of the possible tools to meet that need may lead to growth. The currently perceived advantage of amateur radio as an educational tool in schools may also lead to growth.

To use the opportunities to overcome the threats requires a single, strong organisation, speaking with one voice, and using its resources effectively, not in performing duplicated functions. That was the reason that a new national WIA was proposed and ultimately adopted.

I make no apology for stating firmly that I believe that the role that the WIA undertakes as the representative voice of Australian amateurs, nationally and internationally, is the most important thing that the WIA does. The critical issues of amateur radio at the WRC last year amply illustrate that, and the importance of Australia in that ITU forum, and the importance of the WIA being in a position to nominate two members of the Australian delegation cannot be overstated.

But the WIA does much more than that; it publishes this magazine, and provides member services and assistance at every level. That must continue.

The WIA must be effective. How can the WIA be taken seriously if it only represents less than one in every three

Continued on page 17

Waldegrave Islands IOTA OC–261

April 17 to 21, 2003

By Peter Forbes, VK3QI

After our successful and exciting OC-251 Lady Julia Percy Island operation of September 2002, Tom VK3ZZ and I scanned the IOTA directory. In southern Australia, we found two groups, one in far eastern Western Australia and the other South Australia State West Centre The only problems were the distance to the area from Victoria (VK3), 1400 kilometres plus, and the small amount of information on the area.

The largest island in the SA group is Flinders Island, which is privately leased as a sheep station of some 8000-hectare and lies approximately 35 kilometre off shore. Tom was able to make contact with the owner, Peter Woolford, who graciously offered to allow access to the island. We could fly to the island by light plane and our equipment could be barged from Elliston. Peter Woolford also suggested we contact an abalone diver, Jeff Grocke.

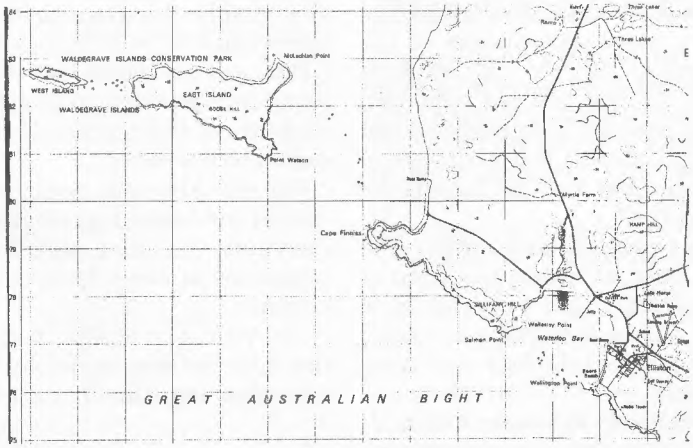
Jeff Grocke runs a very successful enterprise, including two 8 metre Shark Cat boats, which can operate in virtually any weather. Jeff was also the designated emergency boat rescue person for the Elliston area, which made the safety/emergency requirements placed on our access permit by the Parks and Wildlife officials, much easier to negotiate.

The choice is made

Waldegrave Islands were chosen as the most accessible of the islands in the group and Jeff was asked to select a suitable operating point on the islands.

Waldegrave Islands lie some 3 kilometres off the coast and are separated by a body of water that can be very rough at times. East Island is the larger. It is 9 kilometres in circumference, relatively flat on top, with saltbush vegetation, drifting sand and a 25 metre high sandstone cliff almost entirely around its edge. There are three beach areas where one can land and each has a small area near the cliff face, which remains dry at high tide. The day we arrived at Elliston there was a good 3 metre swell running, with spectacular waves crashing onto the southern end of the island. Jeff had chosen an area at the north end with a beach landing, somewhat better sheltered from the prevailing south-westerly swell.

The islands are a conservation park and the South Australian Parks and Wildlife permit states, "The island has a population of Eastern Brown Snakes and Bush Rats, which may cause concern when camping".



Jeff Grocke chose an area, which was absolutely perfect for our operation – large enough to spread out antennas, generator and tents, sheltered from the prevailing winds and with relatively safe access up the cliff face at one end of the beach. We were able to erect the tri-band beam antenna some 30 metres high, directly overlooking our operating position. The beam had a 270 degree salt-water take-off from south through east to west and a relatively clear take-off over the island in the south to west direction. Our other main antenna was a Hy-Gain AV-640 "Patriot" vertical, which was mounted on the beach at the high water mark and had a 140 degree clear take-off from south-east through north to west over salt water, but was shielded in the south-west direction by the island's cliff.

The droopy dipole was erected some 100 metres along the cliff top and fed with open wire line to a 4:1 balun before a coaxial cable run down the cliff face.

The conservation park has several small penguin colonies, resident seals and dolphins who patrolled the water next to the beach in search of food, and many bird species, including Cape Baron Geese.

Being a conservation area, we had to undertake not to disturb the flora and fauna and remove rubbish and waste on departing. The only thing we left behind were hundreds of footprints on the beach.

Why use the special callsign, VI5WCP?

The period 1802 to 1804 was a watershed time in the coastal exploration of Australia. In 1802 the English explorer Matthew Flinders and the French explorer Nicolas Baudin met

in Encounter Bay off the South Australian coast. Both were searching unsuccessfully for an entrance to the great inland sea that was believed to exist in central Australia. England and France were at war, but in the spirit of scientific discovery, relations between the two explorers were cordial, at least.

Most of the islands and coastal features were named at this time and in South Australia especially, many of the original French and English names remain.

Waldegrave Island was named by Flinders on 10th February, 1802 after Sir Richard Waldegrave, who was the Lincolnshire representative of the House of Commons in the British Parliament and Flinders' local member. This operation commemorated its 200th year anniversary.

Operators

It was decided to limit the number of persons to four. Keith VK3FT, Jack Bramham VK3WWW, Peter Forbes VK3QI and Tom Marlowe VK3ZZ (also VK3OK). If you worked us any time from 1600Z till 2100Z (1.30 a.m. till 6.30 a.m. local time) on SSB, it was sure to be Tom, as he is an avid "night owl" operator.

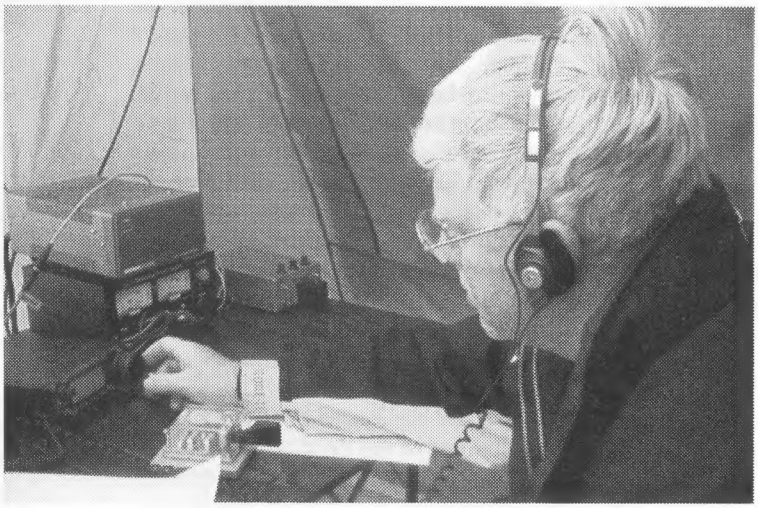
Planning the Operation

We decided on one vehicle and a trailer for the 24 hour trip to Elliston. Weight was not going to be an issue like our previous operation. Jeff Grocke said his boat was capable of carrying a 2 tonne abalone diving outfit and lengths up to 6 metres could easily be accommodated. So we had to decide how much equipment was really necessary. As the equipment would need to be landed by dinghy and the landing could be quite wet, we planned to package the equipment in watertight plastic drums of approximately 60 litres. These could easily house the transceivers, power supplies and most small items that should be protected from the elements.

This put the total weight at 700 kilogram, which fitted in the trailer and rear of the Jeep vehicle.

Our basic equipment was:

- IC-706 and MA-1000 solid-state 12 volt amplifier, MFJ 4245 switch mode power supply to 3 element Hidaka tri-band yagi on a 5 metre mast with a small rotator.
- FT-100 and TX-5500 solid state 12 volt amplifier, MFJ 4245 switch mode power supply to a Hy-Gain AV 640 "Patriot" vertical
- IC-706 to a tuned feeder 13 metre per side droopy dipole on a 10 metre telescoping mast.
- Various MFJ antenna tuning units as required.
- Power source was a Honda EU20i generator with an EU10i as backup. Fuel use for the Honda EU20i is stated as 1 litre per hour, so 100 litres of fuel was needed.
- We decided against computer logging. You can't beat a paper log and clipboard when the wind is blowing, salt spray is all around and the power goes off suddenly due to running out of fuel. The other important issue is looking for broken calls etc. We have already had several instances where the claimed contact was found on the paper logs, not correctly recorded, or at the wrong time, but clearly the actual one. This would not have been possible on a directly entered computer log.
- Equipment for shelter consisted of low wind resistance/low profile tents for sleeping, a large touring tent for the main operating position and a second smaller touring tent for the other operating position.



Peter Forbes VK3QI

Getting it all there

We left Melbourne midday on Tuesday 15th April and, by all four sharing the driving, drove non-stop overnight. This allowed 23 hours to discuss our plans for the operation.

We arrived at Elliston around 11 a.m. on Wednesday 16th and stayed overnight at the Elliston Caravan Park.

The weather forecast for the Easter period was excellent. Fine conditions, 28 degrees maximum, 15 degrees minimum overnight, winds variable, strong at first and moderating.

First light Thursday, we loaded all our equipment into the Shark Cat at Jeff Grocke's boatshed, before towing the boat by tractor 4 kilometres to the boat ramp. The boat was launched and, towing a 4-metre dinghy, we quickly arrived off the island and anchored about 100 metre off shore around 11 a.m.

In four trips we were able to transfer the operators and equipment by dinghy to shore without incident, save a few wet operators from re-launching the dinghy in the 1 metre waves.

Assembling the station went smoothly, due in no small part to having set up the antennas and tents before. Precautions were taken to avoid snakes both in climbing the cliff and moving around on the cliff. Pulling the beam antenna and two support poles up the cliff by rope took some time, but by 5 p.m. local time (0730Z), we were ready to hit the airwaves.

Up and running

Despite extra filters and separation of the antennas, we still had some mutual interference problems, especially where the two bands were adjacent to each other. For example, the 17 m and 15 m bands share the same low pass filter ranges on both the FT-100D and the IC-706. This means that 17 m oscillator phase noise when operating on 15 m is also transmitted and that causes reception problems on 17 m. Fortunately, one combination that works well is transmit CW on 40 m on the FT-100 and receive SSB on 20 m on the IC-706. This was one of the main operating configurations, that netted us so many contacts. For our next operation, we plan even better bandpass filtering.

Many operators in typical urban and semi-rural high noise areas would be unaware of the sort of interference we are talking about, but on Waldegrave, the noise floor was essentially zero. NO noise from the Honda generator (which we have been able to eliminate with appropriate filters and earthing), and receiving conditions such that we could detect the weak ignition noise from passing fishing boats at up to 10 kilometres distance.

The first night was quite windy and around 11 p.m. (1330Z) after 180 SSB contacts, the beam appeared to go dead. Never mind! Three operators were tired and retired to bed for some well earned sleep. VK3QI, continued on all night on CW on the dipole, firstly 40 m (1130Z – 1230Z), then 30m (1245Z – 1630Z) , then 20 m (1700Z - 2000Z) and finally 30 m (2000Z – 2100Z), netting some 420 CW contacts.

First thing on Friday morning, Jack, Tom and I climbed up to the cliff top and lowered the beam to check it out. Clearly there was continuity on the coaxial cable, but no signals getting through. Dismantling the driven element soon revealed a break in the connection on the "hot side" of the 10 m trap coil, hence only the short bit of aluminium between the balun and the trap was active. Jack, whose day job is a locksmith, carries a toolkit for every eventuality. In short order we had oversized self-tapping screws installed to fix the problem and while we were at it, we checked over all the traps and added extra oversized screws where appropriate. The whole exercise took less than an hour and soon the beam was up again and working like new.

Meanwhile, Keith had been operating on the beach mounted vertical, amassing contacts on 20 and 15 m.

The Honda EU20i was simply brilliant, running continuously for 104 hours before getting a break of 3 hours on the final night, and then a final 6 hours of running. To hear the generator inverter go under load when sending CW was fascinating. All the while the output voltage remaining at a steady 242 volts. Despite being run in normal mode, consumption was only 80 litres. (Note: even though the generator has an Economy mode, which uses half the fuel, experienced Honda service people advised us that it is better all round to run the engine at normal speed when running for long periods continuously. This has been borne out by our own experience.)

The Bands

We planned to use the IOTA frequencies exclusively and split frequency operation as the norm. Our aim was 5000 contacts in the planned 100+ hours of operation. The emphasis was on working European stations, who have the largest number and are the keenest of the IOTA chasers, especially long path on 20, 17 and 15 m from 0500Z to 1000Z. We knew from experience, that this was the prime time for European DX.

Our strategy worked better than expected. The following contact breakdown was achieved.

CONTACTS:

2 m	PHONE	4	CW	0
6 m	PHONE	2	CW	0
10 m	PHONE	458	CW	0
15 m	PHONE	785	CW	40
17 m	PHONE	312	CW	447
20 m	PHONE	2709	CW	266
30 m	PHONE	16	CW	1165
40 m	PHONE	40	CW	454

Number of countries worked: 95

CONTACTS WORKED BY REGIONS OF THE WORLD:

Continent	SSB	CW	Com -bined
Africa	18	5	23
Asia	1267	819	2086
Europe	1733	994	2727
North America	904	527	1431
Oceania	388	23	411
South America	16	4	20
Total	4326	2372	6698

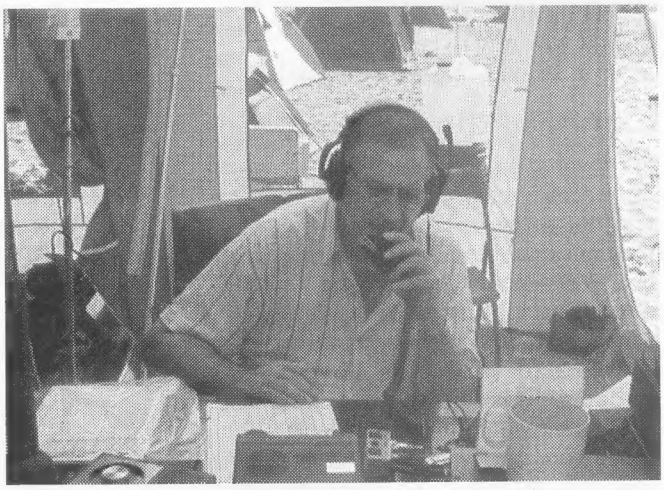
Total number of hours of radios setup on island: 113 hours

Total number of hours an actual operator on deck and listening/ operating: Total = 110 hours

Average QSOs: 61 Contacts per hour

The pleasing figure was the relatively larger number of JA contacts compared with our LJP operation. We believe the three reasons were:

- Better north/south propagation
- Our targeting the early morning JA



Keith VK3FT

opening on SSB, just after sunrise on 20 and later 15 m

- The use of the much rarer VI5 prefix on CW, compared with the VI3 prefix, which is activated every year by our local radio club for the Australian Grand Prix, as VI3GP.

Timing

Good timing always makes for a successful operation.

Being on the descending side of Solar Cycle 23, radio conditions can often be quite disturbed for long periods of time. Certainly on the first day of operation, there was evidence of a geomagnetic disturbance with the A index running at 30 and above.

Over the next four days, the A index ran at 20, 12, 16 and 22 and the solar flux at 112, 120, 125 and 130. Conditions were stable on all bands from 40 through 10 m.

The operation was within one month of the equinox and summer absorption over the important North American and European paths was still relatively low.

Conditions were very good across the Pacific on 10 and 15 m with excellent openings to North and Central America. Long-path conditions on 17 and 20 m were very good to Europe and the Middle East and short path on 20 m to Europe was reliable, if not too strong.

30 m and 40 m provided excellent conditions for CW operation. Around 1430 Z each evening, (midnight local time) it was possible to contact right across the Northern Hemisphere on 30 m. e.g. consecutive contacts from 1437 Z were, UA3SKV, HL1AV, AK7G, N9US, DL1SDN and OH7RJ.

Weather conditions were excellent, with wall-to-wall blue sky every day and a gentle sea-moderated breeze during the night.

Operating and living conditions

Both the FT100 and IC706 rigs performed faultlessly, with the FT100 far superior to the IC706 for CW contacts. This is not a biased comment, as I own and regularly operate both rigs. Even with both having 500 Hz filters, the "CW feel" with the Yaesu is superior.

The MA1000 amplifier was used in conjunction with the MFJ 4245 switch-mode power supply, which is a light weight 45 amp/13.8 volt power house. Although the MA1000 is capable of 500 W PEP output, the power supply would overload at that leve, so we adjusted exciter drive to run around 300 W PEP output. In this way, the amplifier and exciter were running cool.

The use of a small antenna rotator on the beam worked very well over a 60 metre distance and made antenna rotation possible, without climbing a 25 metre high cliff!

It is always difficult to judge the performance of antennas in such conditions, but our experience suggested that they were sufficiently good enough to maintain order on the operating frequencies.

By far the most interesting aspect was the relative performance between the 3 el tri-band beam on 20, 15 and 10 m (at a height of 30 metre and with a perfect takeoff) and the Hy-Gain AV640, mounted at sea level. Sometimes the vertical OUTPERFORMED the beam on direct A/B switching, and at other times the beam was far superior, depending on angle of arrival and time of day.

Given that the AV-640 vertical works all bands from 6 to 40 m and works REALLY well on all of them, it is now our first choice for any future expeditions. The ground independent feed with the counterpoise mounted 2 metre above the sand, remained perfectly tuned under all tide conditions. Prior to the expedition, we had figured out a way of assembling and disassembling the antenna into two bundles of 4 metre length, with the various aluminium stubs and stainless steel counterpoise rods stored inside one of the vertical sections. With no traps involved in the tuning process, the bandwidth is superior and the antenna does not suffer from detuning in wet weather like some trapped verticals have in the past. All in all, the AV-640 is an antenna really worth considering.

Packing up

Our last contacts were on Tuesday 22 April, 11 a.m. (0030 Z)

The weather was fine and sunny and the sea was almost smooth. It took us two hours to dismantle the tents. The trip back to Elliston was uneventful. We left early Wednesday morning for the 24 hour non-stop drive, arriving Melbourne 10 am Thursday, happy with the success of the operation and looking forward to the computer logging and QSLing chores!

Helpers

No expedition can be successful without the assistance of helpers.

David VK3EW, acted as our unofficial pilot. We had access to him via both mobile (CDMA) phone and via satellite phone and could get him to spot us on various frequencies quickly and accurately. This meant maximizing the chances of operators working us when the bands were open.

Ross Keogh VK3MY, from Strictly Ham Pty. Ltd. graciously provided us with the Hy-Gain AV640 antenna at a discount.

Jeff Grocke and his son, Jethro, who transported us safely to and from the island and provided us with much useful advice on the location.

Troy and Andrea Taylor, proprietors of the Elliston Caravan Park, who provided us with advice and brand new on-site accommodation.

Parks and Wildlife, Department for Environment and Heritage, South Australia and in particular, Ross Belcher and Ross Allen, for their friendly cooperation.

Alan VK3BF, for lending us his trailer wheels at the last minute after we found problems with the existing spare wheel on the trailer.

Ian, from Motorola, for the loan of a satellite phone at no charge and Sue VK3LSL for the loan of her CDMA phone.

And to all the operators around the world, who made our experience such a pleasurable one. The kind comments of praise on the incoming QSL cards really made the adventure worthwhile.

QSL Information

Direct with SAE and postage to QSL manager:

Tom Marlowe VK3ZZ
P.O. Box 368
Leongatha
Australia 3953 or
Via the VK3 bureau

BT

more pictures inside back cover

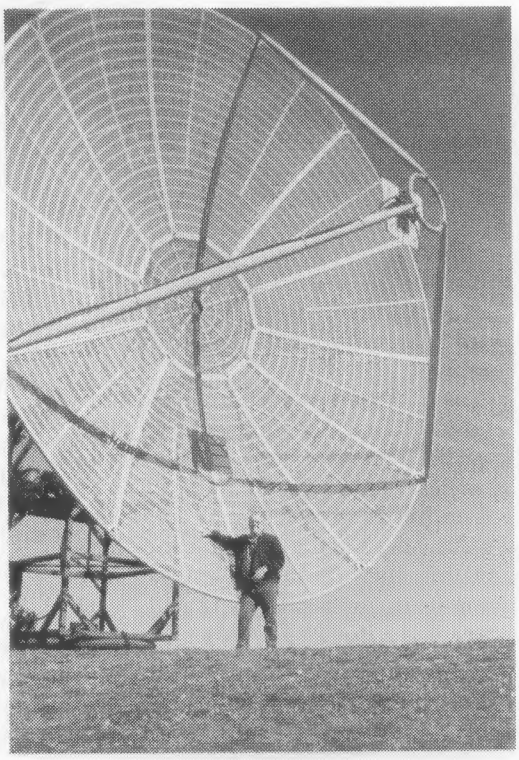
Detecting signals from the Mars Global Surveyor

Doug McArthur VK3UM
"Tikaluna" 26 Old Murrindindi Rd
Glenburn 3717 Victoria

The following posting on the EME reflector caught my eye and after missing the earlier experiment I was anxious to see if I could detect the signal from the Mars Global Surveyor.

During the period August 26-29 2003, NASA's Jet Propulsion Laboratory (JPL) in cooperation with the Stanford Research Institute (SRI) will be conducting a test of the Mars Relay transmitter aboard the Mars Global Surveyor (MGS) spacecraft currently in orbit around Mars. The test involves the spacecraft transmitting a 1 watt 437.1 MHz CW carrier for reception by the 46 metre dish at SRI. Amateurs with 70cm EME class stations using DSP techniques may be able to detect this signal also.

Here was a challenge. This is how I went about it and the results I achieved.



VK3UM and his dish

I should initially explain that I have been actively involved with EME (Earth Moon Earth) for over 20 years and have, after considerable effort and with the help of close friends, erected a 10 metre fully steerable (computer controlled) parabolic reflector.

In brief it has a repeatable tracking resolution of 0.5 degree (limited by of my home brew Gray code position indicators). It is mounted on a 1+ ton Centurion Tank planetary ring gear. The azimuth drive requires 24 volts at 85 amps. The proportional speed control power supply is sizable! The elevation drive consists of two 12-ton hydraulic rams driven by a 3 HP single-phase motor. All up it weighs just over two tons and is held on to the hill with 18 ton of concrete! It does not move nor is there any backlash! At 437.1 MHz it has a gain of 30.5dBi. The dish surface is fully specified to 7.5 GHz and usable to 10.3GHz. (Kennedy reflector, all aluminium welded construction, installed on a home brew mount)

The first thing I needed to establish was the feasibility of actually detecting the MGS signal. Given the 1 watt transmitter output to a unity gain antenna at a distance of 55,770,000 kms it is fair to say, that even with what you may consider is a large antenna, the signal would not exactly *"blow your head off"*! In fact the free space loss at that distance is 240.08 dB. Mind you this is some 20 db less than the EME path on 432 MHz but the MGS was not running the power or antenna gain of my fellow EMErs!

Using my EMECalc software (obtainable from www.qsl.net/vk3bez/vk3bez.htm) it could be seen that given my receiver capabilities, I could only expect to receive MGS at a S/N equivalent to –1.2dB in a 1 Hz bandwidth. This was based upon my receive system temperature of 97°K. (degrees Kelvin) In fact this figure was not correct as I failed to account for another 3dB loss due to the space craft radiating right hand circular polarisation. I am only capable of receiving linear horizontal or vertical polarisation. At the time I believed I should be able to detect the signal and pressed ahead to check and confirm my systems capability.

The receive antenna feed system (and used for transmit) consists of two sets of folded dipoles in an H configuration, remote switchable for both horizontal or vertical polarisation. The spacing has been designed to align the radiation pattern at the 10dB point corresponding to the rim of the dish. This provides a reasonable compromise between antenna gain and antenna temperature. The pre amplifier or low noise amplifier (LNA) at the feed consists of a home brew cavity with a FHX35 HEMFET. Y factor and noise figure measurements indicate it has a noise figure of better than 0.35dB and, with the relay switching and feed losses, provides a receiver noise figure of about 0.7 dB or 51.5°K. Given a Sky temperature of 15°K (hopefully Mars would be in the quiet part of the sky) and ground noise (dish spill over) the actual system noise temperature is about 1.25dB or 97.2°K for elevation angles above 4°. The preamplifier at the feed is followed up at the shack end with an identical LNA which then passes through a 3 cascaded precision stepped attenuators. (10, 1.0 and 0.1 dB steps). These attenuators form the key element to my measuring capability. At this point I have two down converters 432-28 MHz and 432-15 MHz. The former I use to feed my DL9BV automatic noise figure meter whilst the latter feeds a W & G Peglemesser (SPM6 precision tuneable selective voltmeter). This output also feeds sound card and another accurate HP AF voltmeter. The output of the down converters also feeds

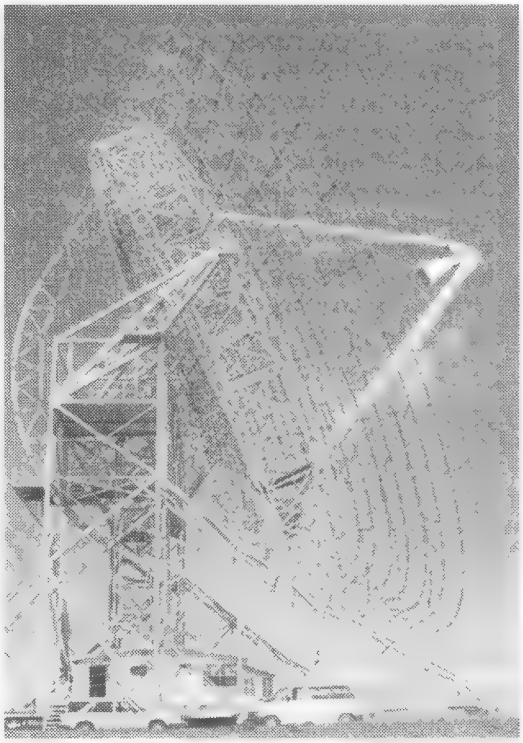
an Icom 751 (receive only) whilst at 432 MHz (switched attenuator output) I also feed the receive section of Icom IC910H. Other test equipment allows for signal generation and frequency measurement when required.

I should explain what Y factor measurements are and how they are used. Y factor measurements (in this case) are simply the difference between two noise source level measurements. One of these sources should be known or the level derived from another source. The Y factor, measured generally in dB, is simply the difference between the two sources. If you know one then you can derive the other. I prefer to use the substitution measurement and you will note that my precision attenuator is placed in the 432 MHz signal path. The reference indicator is the 2.5 dB (full scale) analogue level meter which is part of the precision selective voltmeter.

As an example, to measure Sun noise, I would first direct the array at the quiet area of the sky (Aquarius) and note the level meter reading. I would then direct the antenna at the Sun and add attenuation until the previous level is again obtained on the meter. The Y factor is the amount of added attenuation inserted. This value can then be entered in my software and knowing the Solar Flux Index (SFI) at the time you can derive your Receive System noise temperature. The Sun is not always a good choice of a noise source as its level can vary significantly. Those fortunate to have a large array may choose a known noise source like Cygnus A as a better and a more accurate noise source. Sagittarius is not a good choice either as it is not a point source which may impact adversely on your measurement. You can see that by using the substitution method you do not require a heap of expensive test equipment. There is so much you can achieve by the simple substitution method and I get some enjoyment in deriving the SFI from my measurements and then checking the results off the web. It is rare to be more that 10 SFI units out and if there is a discrepancy you have a problem Houston!

If all of the above seems just too complicated and the figures difficult to understand, then download the software and you will find that by substituting your figures all the hard work and calculations are done for you. Moreover the software provides for "reverse engineering" calculations to derive other unknowns. It is better than the average game programs as it has a large number of buttons and variables you can play with even if you don't know what you are doing!!

Back to checking out the system. Given that my normal operation is at 432 and the MGS is transmitting on 437.1 MHz it was essential to know just how much degradation may occur at the higher frequency. By using the Sun Noise measurement procedure, as described above, the system gain was found to be 10 dB less (due to fixed tuning inherent with the down converter). The Y factor however was within 0.2 dB and totally acceptable. The difference I normally see between the horizontal and vertical dipoles (impedance variation at LNA input) was also much the same (0.25 dB) so I was fairly confident that the higher frequency, that would not be detrimental to the receive performance. I also performed a quiet sky to Cygnus A check at the time and confirmed that the System Noise Temperature was normal as expected. (Y factor measured at 3.5dB)



SRI 46 metre dish

The only way I believed I would be able to detect the Spacecraft was by use of DSP software. Spectran, written by I2PHD and IK2CZL is simply brilliant. I have used it for several years observing Aircraft Doppler Shift and Meteor Activity on both 144 and 432 MHz. The simplest description I can give here is that it takes the receiver audio input to a sound card and displays the signal in an amplitude time domain format on the screen as a white trace or line. Its main feature is to digitally reduce the bandwidth down to 0.032 Hz (selectable) and thus realise a most significant signal to noise improvement. (refer www.qsl.net/padan/spectran.html)

When the bandwidth is narrowed the "signal window" is narrowed as well. In this case the viewable signal window at 0.032 Hz is only 10 Hz and at 0.125Hz it is 80Hz wide. That is fine if you know the exact frequency, and have the time to allow for the overhead processing required to resolve and then display the signal. With a 1GHz processor, it takes about 10 seconds to display a signal in a 0.125 Hz bandwidth. In other words, when you vary your tuning the displayed signal is delayed by 10 seconds. Remember of course that you have to be within 80 Hz of the signal frequency to even see the signal display!

The problem we face with the MGS is that the frequency is not constant as the Doppler Shift between you and the spacecraft is varying rapidly for most of the viewable time. It is rotating around Mars, and Mars and Earth are also moving at differing relative speeds. To calculate the Doppler shift requires some pretty smart mathematics to derive just where you should be tuned. As was described earlier, the space craft antenna (in use) is pointing towards the Martian surface and will be blocked by the body of the spacecraft except for a 5 –15 minute period as it enters (ingress in spacecraft tracking parlance) or exits (egress) "occultation" or blockage by the planet.

During the approach to us the Doppler shift is positive (occultation egress ..received frequency is higher than the signal frequency) and as it heads away

from us it is negative. (occultation ingress.. received frequency is lower than the signal frequency) In round figures it is in the order of 4 kHz but varies from orbit to orbit! MGS will be entering and exiting occultation (blockage by Mars with respect to Earth) with each 118-minute orbit. Again remember that the UHF antenna (with about 0 dBi of gain, EIRP~30 dBm) will only be viewable from Earth for a few minutes (5 to 15 minutes) just before ingress and just after egress during each orbit.

As you can see, given the combination of varying Doppler Shift, the narrow bandwidth with a very narrow signal display window, it is vital that you know just where to tune at any given time. Fortunately I was supplied with one-minute predictions accurate to the Hz. I was somewhat taken aback when I first received them in an email. After a cursory glance I then hit the print button only to find there was 81 pages! I learnt to edit what I wanted first after that!

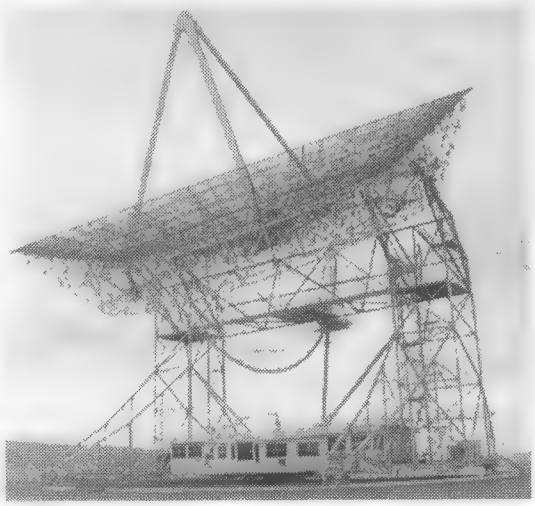
The next thing I had to do was to relocate my main computer down to the EME shack some 200 metres distant. This was necessary to run Spectran as the maximum speed I could muster was essential for fast decoding. My dish tracking and house keeping is done on a small IBM Notebook where speed is not important.

When I tuned on the computer and tuned to the appropriate frequency, lo and behold, Murphy had already predicted my actions and was producing the weakest of weak signal precisely where I did not want it! After removing the covers from the computer the source was traced to one of the Crystal Oscillators on the video card. Grabbing a bare alligator clip (no lead) I attached it to the Crystal case and the birdie moved outside the desired frequency range! Be aware that when using Spectran it is essential to keep audio leads well shielded with no current loops etc as its sensitivity is extreme and it loves to display 50Hz traces!

Now to check out the antenna tracking. Not a problem expected here, just click on Mars and away we go. This is my own tracking software that I (and many others) have been using for years. I was using it only the previous weekend looking at Jupiter's IoB pulses and "working a few off the moon". Clicked on Mars and away hummed the motors. Hang on, Mars is not setting it is rising! A day later I finally tracked the tracking error to the 2000 Epoch Ephemeris data having a 12-hour right ascension error! All the other planets were spot on — of course only Mars was wrong! Murphy again!

Now we were tracking Mars and JPL was about to turn on MGS at 1200 UTC on August 25th 2003. Incidentally, given its distance from Earth, the transit time for the signal to reach Earth is 3:05 minutes. Thus when commanding the "bird" it takes 6:10 minutes for you to know that your actions worked!

My first attempt to detect the MGS signal (CW only) was from 1221 UTC, (some 20 minutes after switch on) and at 1226 I "painted" a very weak signal at 437.103.500 (in a 1Hz BW) for 25 seconds. At this time I had not received the accurate Doppler calculations for my location and was relying upon the predicted "4 kHz shift". What immediately appeared suspicious was that the observed signal was not exhibiting the characteristic Doppler Shift as expected. MGS at that time would have exhibited about a 1.5Hz per second downward shift. The signal I was "painting" showed little shift at all. Over the next few days I saw this very same signal on many occasions and finally deduced it was as a result of aircraft reflection from a source unknown. During the first night I listened to 3 orbits from 5 to 15 minutes just before ingress and after egress. Unfortunately no signals were detected.



SRI dish

The following day, 26th August 2003, I received the Doppler predictions for my location. This allowed me a greater degree of confidence to know exactly where and when to tune. As a consequence it allowed me to narrow the bandwidth to the maximum possible. Alas still nothing, although at times one was becoming "line happy" thinking you could see a coherent line in the snow. This is very similar to "hiss happy" that many of us are familiar with but in a visual format!

It was not until 28th August (after monitoring many orbits) that at 1328 I noticed (0.5Hz BW) a broken trace exactly where I expected to find the signal. The trace indicated that the signal's amplitude was varying at about a half second rate. I switched polarisation from Horizontal to Vertical and it seemed to "paint in" the missing signal for that time period. In other words it appeared that the signal might have been the result of the spacecraft spinning. I watched it for about 90 seconds and during that time the Doppler shift appeared to follow the identical signature as predicted. At 1356 I again saw a similar signal for another 15 seconds or so in the right Doppler "ball park area". I saw nothing after that time until I ceased tracking at 1410.

I reported my findings and asked about the possibility of the signal variation and received the following response. *The spacecraft is 3 axis stabilized, so signal variations cannot be explained by spin modulation. Also, the antenna on the spacecraft is circularly polarized ...* which to me indicates that what I was seeing may not in their opinion have been the signal in question? (All I was really saying is that the amplitude variation could not be explained by spacecraft spin ... what you saw certainly could have been the spacecraft ... particularly since the Doppler signature seemed to match well.) All the same I do feel fairly confident that it was the MGS given the exact Doppler signature it exhibited. Why I had not seen the signal in earlier orbits? I believe it was due to the background sky noise. It was lower on the 28th and would have remained that way for the next few days. Unfortunately I was unable to track MGS on the following night prior to JPL

turning it off at 1956 on the 29th due to 80 kph winds. I would dearly like to have confirmed categorically the received signal was MGS. Murphy again!

During this time we were being given most valuable feedback and confirmation that the SRI 46 metre dish was copying the signal just fine! It really puts you back into reality, as by amateur standards, there are not too many larger dishes around but it felt so inferior compared with the "big boys"! 12.8 dB does not sound much (that's the difference in antenna gain between VK3UM and the SRI dish) but it really is breathtakingly large by comparison!

It was a fun exercise commensurate with our Amateur radio pursuits and if nothing else showed just what can/can not be achieved. A bit like proving Ohms Law I suppose? The result is known before hand .. but achieving it can be challenge.

Over view of the Mars Global Surveyor

Refer http://mars.jpl.nasa.gov/mgs/

MGS Role with the Landing Craft and Earth Control

(much edited but courtesy of JPL)

The Mars Relay system provides a simple low to medium rate (8,000 and 128,000 bits per second) UHF link (approx. 405 MHz) between a Mars orbiter and any ground station.

The Orbiter transmits an FM beacon at 437.1 MHz with one of three Request Command (RC) subcarriers (to trigger specific landers) when the Orbiter's guidance system determines that a Lander is within view.

If Lander receives beacon (with appropriate RC subcarrier), the Lander transmits approx. 2 seconds of pure carrier followed by approx. 0.5 seconds of pseudo-random numbers to allow the Orbiter receiver Viterbi decoder to synchronize.

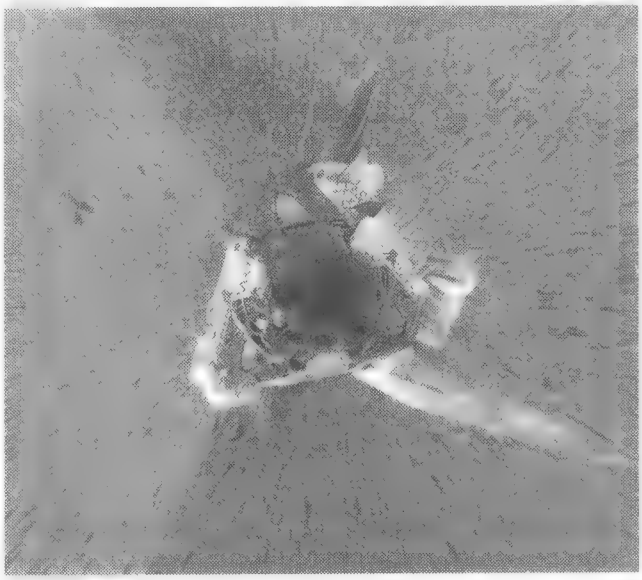
The Orbiter determines if Lander-Orbiter link is satisfactory (greater than -126 dBm for 8000 bits per second data rate), if so it sends the telemetry command (TC) signal to the Lander. After receiving the TC, the Lander transmits its science telemetry to the Orbiter until either loss of signal (at the Orbiter) or the end of the 16 second Balloon Telemetry Time Slot (BTTS). The time available for telemetry transmission is approx. 13 seconds (if the Orbiter is in range).

The data and control with the Earth stations is provided at X-band where the Downlink is 8400 - 8450 MHz and the Uplink: 7145 - 7190 MHz

The launch of the *Mars Global Surveyor* from the Cape Canaveral Air Station took place on November 7, 1996. After a ten-month cruise to Mars, the MGS spacecraft executed its orbit insertion manoeuvre on September 12, 1997. The period of the initial orbit of Mars was nearly two days. The mission plan called for a three- to four-month aerobraking sequence to modify the orbit to one suitable for mapping the red planet. The mapping phase of the mission was then scheduled to begin in the spring of 1998, and to continue for one complete Martian year (687 days).

Unfortunately, problems with one of the two MGS solar panels forced the aerobraking sequence to proceed more slowly than planned. MGS executed its final aerobraking pass through the upper Martian atmosphere on February 4, 1999, and successfully performed its aerobraking exit manoeuvre later that day. MGS executed its transfer to mapping orbit on February 19, 1999, and since then has been in the desired mapping orbit with a period just under two hours and an altitude of approximately 250 miles. The primary mapping phase of the MGS mission began in March, 1999, and was completed in January, 2001 after one Martian year. An extended mapping mission began on January 31, 2001 and is expected to continue into the year 2002. The extended mission will permit study of year to year changes on Mars.

The two rovers, Spirit and Opportunity, arrived three weeks apart in January at opposite sides of Mars. They bounced and rolled inside cocoons of inflated airbags. Unlike the much smaller Sojourner rover of the Mars Pathfinder mission in 1997, each Mars Exploration Rover will be independent of its stationary lander, capable of communicating directly with Earth and carrying a full set of cameras for scouting locations to explore. At selected rocks it will extend an arm bearing geological tools for close-up analysis. The landing sites were selected as places likely to hold geological clues about the history of water on Mars.



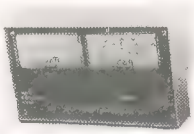
The Mars Exploration Rover Spirit on its way to the Martian surface in January 2004
NASA/JPL/Arizona State University

Acknowledgement

Joe Fitzgerald (KM1P) provided the most valuable liaison and information flow with John Callas, Ph.D. Mars Exploration Rover Project Science Manager, Jet Propulsion Laboratory Pasadena, California.

Test Equipment

Autek WM1 2 KW peak reading wattmeter

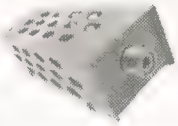


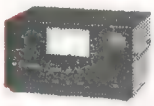
Autek RF1 HF Antenna Analyzer

Autek RF5 VHF/UHF Antenna Analyzer

Autek VA1 MF/HF Vector Antenna Analyzer

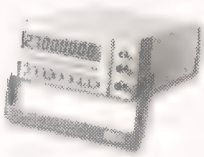
Ten Tec HF/VHF Dummy Load Kit

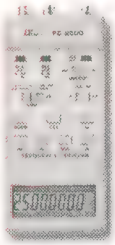




Ten Tec HF/VHF SWR Power Meter Kit

Lutron Bench top 2.7 GHz Frequency Counter





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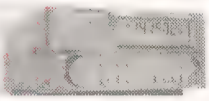

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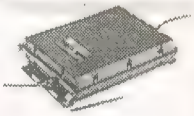

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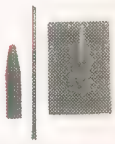

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In Charlie's Way

A short story about a ham, his mates and the CW receiving exam.

Ross Fraser VK2WN

Part 2 - 'The kindness starts'

Colin put on his thinking cap for the rest of the day and tried to come up with some ideas to discuss with Charlie the following morning. All day at work he tried to focus on what he was doing but his mind kept wandering back to finding a way to help his friend pass the exam. As he drove home he had more time to think and came up with a few ideas.

'What about me sending him some morse over the air?' 'What about if I get him to come over to my shack and we can practice some receiving exams?'

Colin was deep in thought when suddenly the speaker, near the two metre radio produced a loud blurting sound. It sounded like eggs sizzling in a frypan. Colin nearly jumped out of his skin. 'Damn pagers' he said out loud. Just then he heard his callsign followed by Charlie's. Charlie was calling him.

Colin announced Charlie's and then his own callsign before adding 'How're y' going mate?'

'Good' said Charlie.

Colin explained to Charlie some of the ideas that he had and then Charlie came back with 'I'm not sure if I want to sit another damn exam'.

'Fair enough' said Colin trying to encourage Charlie 'but I have a master plan that I think will get you through. The three Ps'.

'What's that' said Charlie sounding sceptical, 'panic, panic and more panic?'

Just before Colin responded another blurt of pagers crackled through. 'Damn fried eggs! No, not quite, but you're close. Practice, practice and more practice! And I'll be able to help you so you won't be doing it on your own. What do you think?'.

Even though the QSO hadn't been going for a full 10 minutes Charlie announced Colin's callsign before giving his own and then continued with: 'Sounds good but if I did any more practice I think I'd be hearing CW in my sleep. These bloody diddly-dahs give me the good and propers. I want to pass it so I can get my full-call but listening to it for too long gives me the willies. In fact, just thinking about it is starting to give me a headache!'

Colin knew only too well what he meant. He'd been in the same situation a few years ago. 'I know what you mean. You're going to have to take some headache tablets after this question. When's the next exam, the twelfth?'

'My headache's getting worse now. No, it's the sixteenth.'

'Hang on' Colin said, slightly sarcastically 'I thought you said you weren't sure about sitting another exam'

'It pays to cover all bases in case I find inspiration,' said Charlie a bit despondently.

'That's fair enough. Okay, that gives us, gives *you*, just over three weeks till the exam. So how about we give you a few days to get over your headache and then start preparing, eh?'

'Okay, sounds like I don't have any choice. I suppose I'll give it another go. And this better be the last time!'

Colin hoped it would be too. 'I can't promise anything except that we'll have you one hundred prepared for the exam. You'll be receiving at twenty-five words-per-minute by the exam'.

Charlie knew Colin's humour. 'What ever you reckon. Ten will more than do.'

Colin and Charlie said their good-byes and organised to chat on 80m in the morning.

to be continued

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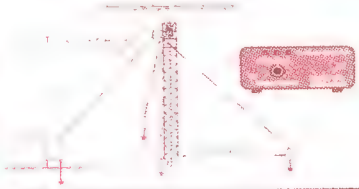

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A basic GPS unit

Dale Hughes VK2DSH

This article describes a basic Global Positioning System (GPS) unit that displays time, latitude and longitude. It uses the Trimble Lassen SQ GPS receiver and magnetic mount patch antenna that is readily available for a relatively low price. This article is intended to generate ideas and interest, so no circuit board artwork or software for micro-controller is presented. However these can be supplied to interested readers.

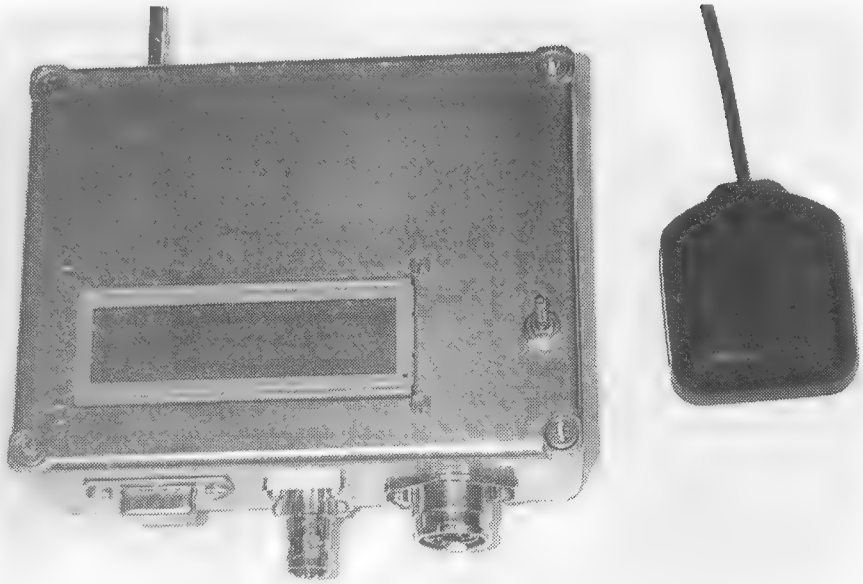

Figure 1: The complete GPS receiver and antenna. The switch on the right hand side of the receiver box selects which information is to be displayed; either the time and date, or latitude and longitude.

Accurate time keeping and navigation has a long history and mankind has expended much intellectual effort in establishing methods for keeping track of the time and accurately determining position. Clocks have progressed from pendulum types to Hydrogen Masers. Navigation has progressed from clocks, sextants and charts to the Global Positioning System. Instead of requiring skillful use of a sextant to measure position accurate to one or two kilometers, portable GPS receivers can display their position anywhere on earth with an accuracy of a few metres.

The GPS system consists of a constellation of 24 satellites and five ground stations, operated and maintained by the US Department of Defense. Each of the satellites transmits on two frequencies. Civilian GPS receivers operate on the so-called L1 frequency of 1575.4 MHz. The L2 frequency (1227.6 MHz) is not available to the general public, however sophisticated receivers make use of both frequencies so that transmission delays caused by the ionosphere can be corrected.

The stated horizontal accuracy of the Lassen SQ GPS receiver is better than 9 metres for 90% of the time, this can be improved by averaging the measured position over time.

In the device described here, data from the GPS receiver is displayed on a 16 character by 2 line Liquid Crystal Display (LCD) driven by a separate micro-controller. The data is also transmitted in serial form from the RS 232 interface. Direct access to the GPS receiver is available via the RS 232 interface. This allows the user to access much more information than is displayed on the LCD; amongst other things, information regarding each satellite currently visible by the GPS receiver is displayed, or the user can configure the GPS receiver in various ways. This software, SQ-monitor (for Windows) and TSIPCHAT (for DOS), is available for free download from Trimble. See reference (1) for details.

The Lassen SQ GPS receiver module and antenna is available from Step Global, see reference (2) for details.

Circuit description

Figure 2 shows the schematic diagram of the complete unit. Signals to and from the GPS receiver are via a serial interface (connector J3), these signals are at CMOS levels and require conversion to RS 232 levels for communications with an external computer or terminal. A MAX 232 (IC3) converts the logic level signals to RS 232 levels. Jumper block J2 allows the user to connect the GPS receiver serial I/O to either the local micro-controller (IC1) or to the RS 232 (IC3) converter, or both in the case of the GPS transmit line. In normal use, the serial output from the GPS receiver is connected to both the micro-controller and the RS 232 interface as this allows time and position data to be displayed on the LCD and be transmitted to a host computer via the RS 232 interface. Sending commands to the GPS receiver is only possible via the RS 232 interface as the user must be able to set the GPS receiver to the correct configuration. (Described later)

The micro-controller (IC1) is an Atmel AT90S8535P device, it is available at low cost and offers many advantages for a project of this type. It contains inbuilt serial communication facilities, adequate program and data memory and fast operation. In this application it reads the ASCII data output from the GPS receiver, extracts the required information and displays time, date and position on the local LCD.

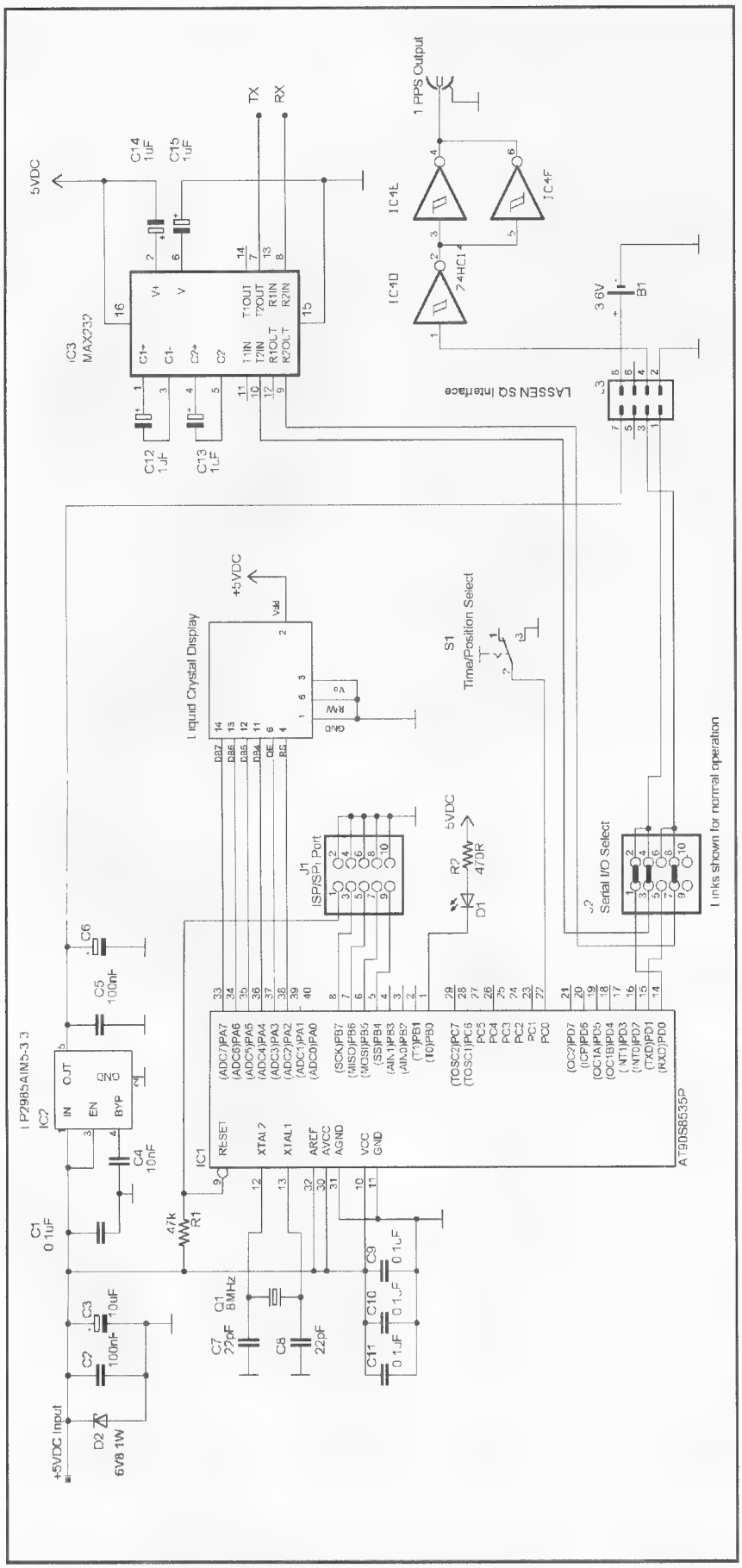

Figure 2: Schematic diagram of the GPS unit.

For accurate timing purposes, a 1 pulse per second (1 PPS) output is available. When the GPS receiver is receiving data from the constellation of GPS satellites, the 1 PPS signal is locked to the orbiting atomic clocks and provides a signal pulse that is locked to UTC (100 ns).

Power to the unit is via a 5 Vdc input which drives the micro-controller, the RS 232 interface, the 1 PPS buffer (IC4), the LCD and 3.3 Vdc regulator (IC2) for the GPS receiver and antenna. Current consumption is approximately 80 mA, so operation from a battery is entirely feasible. As the GPS receiver contains its own real time clock, a 3.6 Vdc Lithium battery is provided to keep the GPS real time clock running when the external power supply is removed. This ensures a rapid acquisition of satellite data with a consequent rapid display of time, date and position when power is re-applied. If the battery is not fitted, the GPS receiver has to 'cold start' every time it is used and time and position data will not be available for several minutes.

A 'mode' switch allows the user to display time and date or latitude and longitude on the liquid crystal display. As my main purpose for building the device was time keeping, I set the default display to be time and date.

Construction

The complete unit is housed in a small die-cast box. A double-sided printed circuit board contains all the circuitry, with the GPS receiver being mounted on the underside of the printed circuit board. With the exception of some by-pass capacitors and the GPS receiver, all the other components are mounted on the upper side of the circuit board. Figure 3 shows the circuit board and the GPS receiver module.

Construction of the unit is straight forward and the only slightly difficult part is soldering the 8 way surface mount connector for the GPS receiver and several of the surface mounted components. This requires a steady hand and good eyesight!

The printed circuit board artwork was created using EAGLE. An evaluation version of the software is available for free download, see reference (3) for details of obtaining EAGLE software.

It would be feasible to construct the circuitry on 'Vero board' or similar

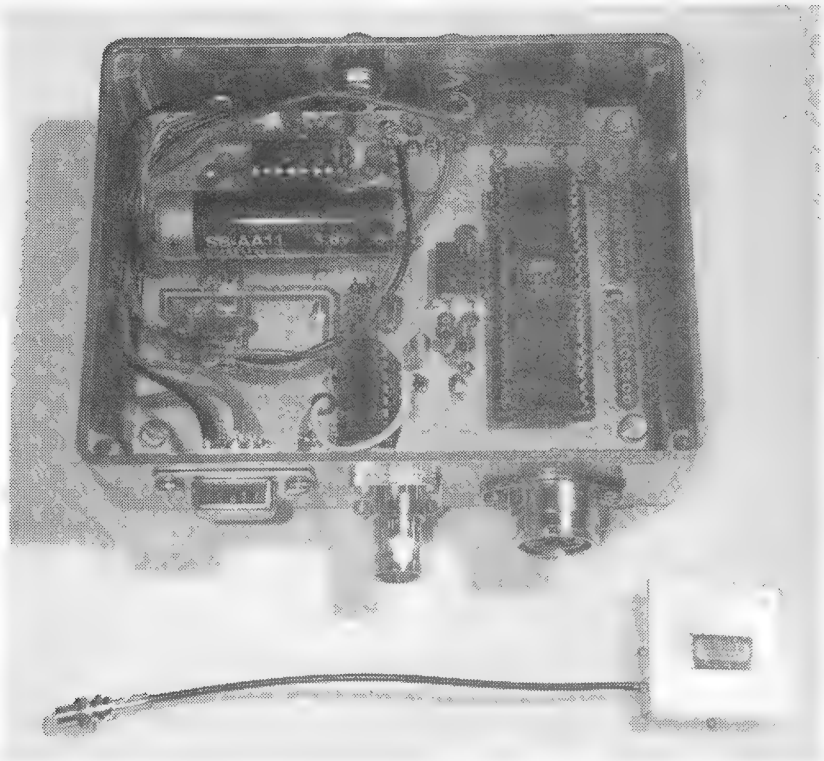

Figure 3: The printed circuit board and GPS receiver. The photograph was taken before the liquid crystal display, mode switch and GPS receiver were fitted. The GPS receiver mounts underneath the circuit board and isn't visible after the circuit board is mounted inside the box. The DIN connector on the right hand side is for a high-speed serial interface and is optional.

prototype boards, in which case surface mounted components would not be necessary. With care, it would be possible to solder fine wires to the GPS receiver connector to provide power and communications.

All of the parts used in this project are readily available, Table (1) lists the major items:

Other components such as resistors, capacitors, connectors etc, are available from various suppliers.

Software

Evaluation software is available for users to configure the GPS receiver and to extract time, position and other data. Figure 4 is the main screen of the SQ_Monitor software. It shows various status messages, as well as time, position and velocity. The software also shows what satellites are currently visible from the location of the antenna. In the case shown, four satellites are visible. Data from the GPS receiver can be sent in two different formats:

- Trimble Standard Interface Protocol (TSIP, a binary protocol), or
- NEMA messages (An ASCII or plain text protocol).

When using SQ_Monitor, TSIP must be used. The interface to the micro-controller uses NEMA messages, as it is easier to extract information from the ASCII string, instead of the floating point binary numbers used by TSIP. A nice feature of SQ_Monitor is that it allows the user to set the PC clock to GPS time, which ensures that it is accurate. A number of GPS receivers can be connected to a PC running SQ_Monitor, so that differential positioning is possible.

The micro-controller software takes the NEMA message from the GPS receiver and extracts time, date and position. This information is then displayed as two screens of information on the liquid crystal display. If an insufficient number of satellites is visible an error message is displayed. The time and position are updated each second as long as at least three satellites are visible. The micro-controller code is written in assembler using Atmels Studio4 development system. See reference (4) for more information. The existing micro-controller software accepts only the NEMA RMC message, so the GPS receiver must be configured to transmit the RMC message before using it with the micro-controller and local display. This is easily achieved using the TSIPCHAT software that is available from Trimble.

Performance

A clear view of the sky is required for best performance of the unit, however even if the antenna is on an inside window sill and enough sky is visible, time and position data will be available for much of the time. When the antenna has a clear view of the sky, time and position data is available for 100% of the time. Time and position is updated every second and, when using SQ_Monitor, the receiver velocity in three dimensions is also available, making it ideal for mobile applications.

Conclusion

A basic GPS receiver unit has been described which offers a good level of performance. Artwork for the printed circuit board in EAGLE CAD format can

	Description	Supplier	Part or catalogue number
	Lassen SQ receiver	Step Global Pty Ltd	
	Diecast box	Jaycar Electronics	HB-5067
	Liquid Crystal display	Dick Smith Electronics	Z-4170
IC1	ATMEL AT90S8535P	Dick Smith Electronics	Z-9205
IC2	LP2985AIM5-3.3	Farnell Components	121-812
IC3	MAX232	Jaycar Electronics	ZK-8824
IC4	74HC14	Jaycar Electronics	ZC-4821
B1	3.6 V Lithium battery	Dick Smith Electronics	S-3368

Table 1

Figure 4: SQ Monitor screen.

be provided to interested readers. Also, a hex file of the micro-controller software can be provided so that interested readers can program their own device. Please contact me via email at Dale_E_Hughes@bigpond.com.au

References:

(1) See http://www.trimble.com/ for a range of information on GPS products and software. SQ_monitor and TSPCHAT.exe are available for free download. The site also has a tutorial on GPS systems.

(2) The Lassen SQ GPS receiver is available from STEP Global Pty Ltd, PO Box 355, Bayswater, Victoria 3153. Telephone 03 9720 2892. See their web site at http://www.stepgps.com

(3) A basic version of the EAGLE CAD package can be downloaded from http://www.cadsoft.de Note: The software is free for hobby use only.

(4) See http://www.atmel.com for information on the AT90S8535 micro-controller and the Studio4 development system.

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WIA Comment

Continued from page 3

amateurs in Australia?

I know that there are people who have been in the past members of the WIA but who are not members today.

For whatever reason they have ceased to be members, I urge them to consider rejoining.

To those who are amateurs and who have never been members, I urge them to now consider joining.

To our existing members I say this: please consider whether you are in a position to encourage someone else to be a member. And please make the time to do something about it.

A downloadable membership application form is available on the Institute's website.

Many people over many years have argued that a single national WIA was necessary. It has been a matter for discussion for many years, perhaps for too many, perhaps raising doubts as to the credibility of the WIA.

I hope that new members and former members rejoining will support the move that has been taken.

I know that with such a fundamental restructure there will be times when the transitions and tasks are not as efficient or as smooth as we would have liked. But I hope that everyone will appreciate the enormity of what is being undertaken.

The WIA must have the strength and the wisdom to make the most of the opportunities that are emerging, and to overcome any perception that amateur radio is the interest of an ageing and dwindling group. We must work to attract new amateurs, and younger amateurs. The Institute must have younger people active in its affairs.

I am sure that with your support, and the support of a majority of Australian amateurs, the WIA will succeed.

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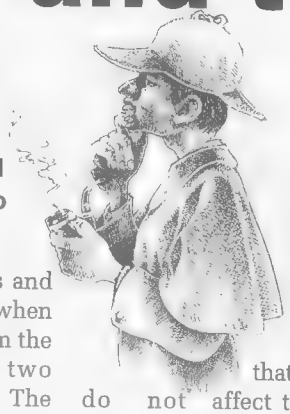
Sherlock Homes and the 50-year mystery



About 80 years ago the greatest mystery of electronics was stumbled upon: the dreaded super regenerative detector. So many have tried to solve its operation, and so many have failed.

Frank Shaw VK6ALF

My name is Sherlock Homes and along with my assistant, I shall illuminate the long darkness of the theory of the dreaded mystery. Please follow this story carefully and you should be much clearer on the operation of this wonderful little design. It does not suffer certain dreaded symptoms as many have claimed: like it radiates a strong interfering signal or it has too wide a selectivity etc.

These allegations simply relate to how the circuit should be used properly. The simple fact is that a self-quenched super regenerative receiver is a dual conversion detector amplifier superheterodyne receiver. A small triode is usually used as a self-oscillating modulated oscillator, operating on the frequency of the signal to be received.

The First Conversion

Let's first drop the term quench. No quenching takes place to be quenched. Let that term be called the conversion oscillator/modulator.

To the circuit. It will be noted in the representative circuit of operation that the triode is self-oscillating at 10 MHz and is generating a second component at 10 kHz. This produces a 10 MHz signal with two sidebands of plus and minus 10 kHz - an AM signal. Now when this combination is subtracted from the incoming AM signal that has two sidebands plus and minus 1 kHz. The resultant is the first IF, in this case two signals of 9 kHz and 11 kHz, plus the 10 kHz modulation frequency (quench).

The Second Conversion

To continue from the above First Conversion. The lower sidebands components that form the first IF – 9/10/11 kHz are simply subtracted from one another and the lower sideband frequency of 1 kHz is the recovered modulation signal of the incoming signal to the receiver.

Detection and Amplification

The recovered 1 kHz modulation signal appears between the grid and cathode of the triode, and is detected as a grid leak detector, and is amplified by the triode. A RF filter is provided at the output of the valve, to block the quench frequency, in particular, from appearing at the output, where it would badly overdrive the following amplifier stages at the rate, in this case, of 10 kHz. The filter also ensures that the following stages do not affect the RF operation of the 10 kHz circuits. As all functions are achieved with only one grid bias valve, a certain amount of distortion is normally tolerated. The circuit works equally well for AM/PWM, and has almost perfect AGC and ignition noise limiting.

To receive PM the method of tuning is detection by slope detection. Example The Bendix radio radar altimeter as used in the Mirage fighter aircraft once used by the RAAF is called the model APU-141v. The receiver is a self-quenched super regenerative receiver that receives nanosecond pulses from the ground to indicate altitude. To process these very narrow pulses requires a receiver bandwidth of 200 kHz, with lots of amplification. The super regenerative receiver is ideally suited to the task. The output video bandwidth is easily achieved, along with high amplification. Try to do this task with any other receiver. Many light aircraft used in their VHF radio IF section, a super regenerative detector complete with its

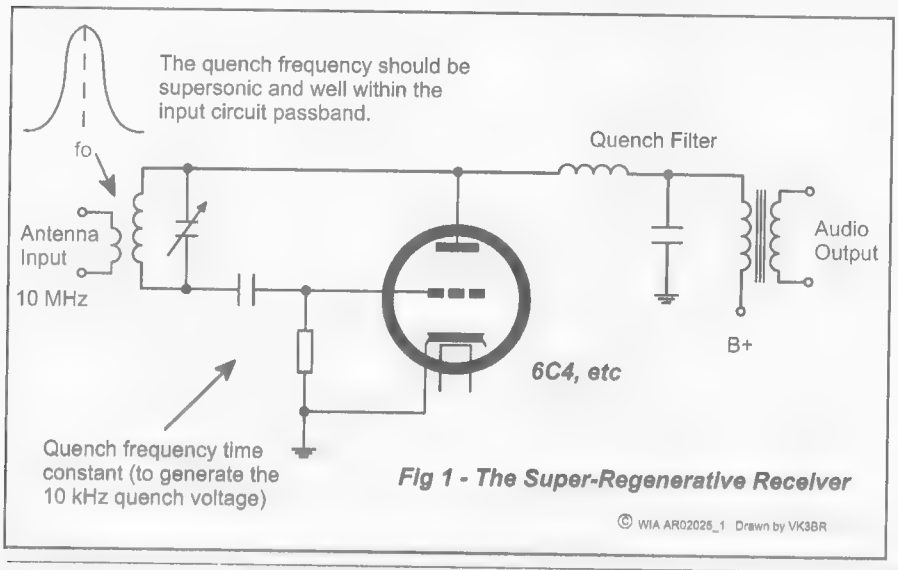


Fig 1 - The Super-Regenerative Receiver

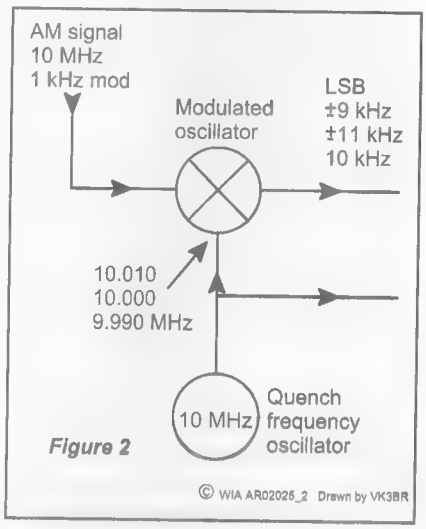


Figure 2

SSB back to basics transmitter

April 1995 revisited

By Neville Chivers VK2YO

Why revisited?

Let me explain. I originally produced these "Back to Basic" articles - the receiver published in January 1995, the transmitter in April 1995, and the VXO in August 1995 issues of *Amateur Radio* magazine - to prove to some skeptics that it was still possible to home brew a simple amateur station from components available from the most common suppliers such as Dick Smith, Jaycar, and Tandy, etc.

I had quite good feedback from these articles.

I finished the transmitter at about one watt output from a 2N3866 and I had a few contacts at that power level to prove the point. But I must admit that one watt of PA power was a bit weak, so I mostly operated into an old amplifier I built as a transverter, with parallel 807s for finals, originally to work the "new" WARC bands in 1980.

Eventually the filter choke in the power supply shorted its turns and, as I didn't need to operate my home brew 40 m rig, I put it away in the cupboard where it stayed until another amateur (VK2AUS, now SK) visited me last year and asked me about it.

At about that time I read an article in an American journal about the popularity of QRP operation, defined as transmitter power up to five watt.

So I thought why not add a small solid state PA to my original 1995 home brew SSB transmitter and complete the original series of articles, but broadband the PA so that it could be used with any low powered transmitter on most HF bands, not just 40 m.

As built with a crystal oscillator feeding into the front end, and a resonant antenna after a tuner at "C" in the circuit, output power was substantially the same on 80, 40, 30, 20 and 17 m. I could not go higher for want of more crystals for those bands.

Using only the Dick Smith catalogue, this is what evolved. First of all, what transistors were available? There was only one, really, the BD139 rated at 8 W, I would guess in class C. As a linear amplifier it produces about 5 W on 40 m with about one watt drive from the proceeding stage, a 2N3866.

As you can see, the circuit is quite straight forward. Mine was built on perforated board and hard wired. The output transformer needs some explanation, perhaps. It is made of two F34 toroids – the only ones available from Dick Smith – stacked one on top of the other. Take 250 mm of 27 SWG enamelled wire and wind on nine turns for the primary. This should leave about 20 mm for each lead, one to the transistor collector and one to B+ via the 68 ohm resistor.

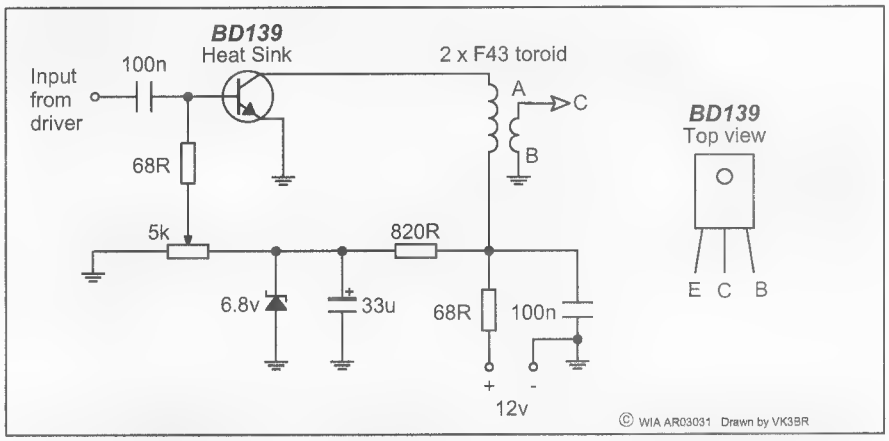
If instability is experienced when first tried out, reverse the secondary connections at A and B as indicated on the circuit diagram.

Output from "C" goes to a harmonic filter for whichever band is selected. I can do no better than refer you to Drew Diamond VK3XU's excellent tabulation of low pass filters in his article on page 17 of the February 2000 issue of *Amateur Radio* magazine. The filter is particularly important if the PA is issued without a tuner direct to the antenna.

If you use an antenna tuner between this PA and your antenna, you may find any unwanted harmonics are suppressed by the tuner at this power level.

The project is now completed after all this time!

Parts List	Dick Smith Cat No
BD139	Z1443
6.8 v Zener diode	Z3531
5 k potentiometer	R1769
2 x F43 toroids	R5400
27 SWG wire	W3126
Dual prototype board	H5607



Output Transformer – primary nine turns of 27 SWG enamelled wire on two stacked F43 toroids – total length of wire 250 mm – secondary return loop of insulated hook-up wire through toroids.

Sherlock Holmes *continued*

own squelch. Remember these radios are narrow band AM.

Technical Editor's Note

A recent discussion of the operation of the super regenerative receiver by Charles Kitchen appeared in Communications Quarterly Fall 1994 edition.

The original article was by Edwin Howard Armstrong in 1922 published in Proc IRE Vol 10 No 4 Aug 1922.

Another historical article was by Hikosuburo Ataka in Proc IRE Vol 23 No 8 Aug 1935.

Super regenerative receivers have been used recently in some consumer wireless devices.

ALARA

Christine Taylor VK5CTY
vk5cty@vk5cty or geencee@picknowl.com.au

Annual General Meeting

The AGM of May 3rd was well attended and had quite fabulous conditions. There was a little QRM at the beginning but once the meeting really started the interference disappeared. Almost everyone could hear almost everyone else. Most amazing and very helpful.

The new committee is not very different from the old one with

President	Susan VK7LUV
Vice President	Judy VK3AGC
Jnr Vice President	Bev VK6DE
Secretary	Margaret VK4AOE
Treasurer/Souvenir	Bev VK4NBC
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VK4 Rep	Dawn VK4HER
VK5/8 Rep	Jean VK5TSX
VK6 Rep	Bev VK6DE
VK7 Rep	Susan VK7LUV

The old members were thanked and the new members were welcomed and the meeting proceeded without problems so there was time for a chat afterwards. We all hope the conditions on 80 metre will continue to be as good.

Why not join us and find out if they are as good?

The International YL Meet in Seoul

At latest information there will be at least nine ALARA members in Seoul. We have Gwen VK3DYL, June VK4SJ, Maria VK5BMT, Unni LA6RHA, Mio JR3MVF, Carol WD8DQG, Ruth IT9ESZ, Evelyne F5RPB and Walli DJ6US. I believe Raija SM0HNV plans to be there, too, so altogether it looks as if ALARA will be well represented.

We wish you all well and wish we could join you.

Gwen has been asked to talk about the Dxpeditions she has organised so she is preparing a PowerPoint presentation of those very successful excursions to interesting places. Hope that all goes well, Gwen.

There will be a special radio station with the callsign of DT0YL so listen out for it between 8th and 11th October 2004. Probably it will be operating on most of the HF bands and it is sure to be using both CW and phone.

The QSL card will be interesting, I'm sure.

Update on those radios

Well there has been some sickness around so things have been delayed but by this time next month the radios should be in VK5 and in use. Watch this space!

ar

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Did you catch this?

From 17th Nov to 2nd Dec there was an International DXpedition in Tunisia, to the Kerkennah Islands, north of Jerba IOTA AF-073.

There were YL and OM operators. Each radio station had a laptop with a WLAN-card and the CTWIN log of K1EA so records could be kept very easily. There were 6 different radios in 4 different shacks.

During the expedition the operators took part in the CQ WW DX CW Contest with 9,999 QSOs and a final score of 25,000,000 points WOW!

Altogether there were 53,042 QSOs in SSB, CW and digital modes on 10 different bands. There were 18 OMs and 4 YLs. They were busy little bees. But they had fun! I do hope all those keen DXers made some good contacts, just to keep the QSL manager busy. Conditions are improving all the time

Now that winter is here and daylight saving on the other side of the world makes the time of the net so much more convenient for YLs to call into the net.

We love to hear them and they are just as excited to hear us.

The net is controlled either by June VK4SJ or Dave ZL1AMN who both have good antennas and receivers. Officially the net starts at 0530 UTC but the keen operators are usually on frequency anything up to half an hour earlier.

Don't be surprised if the YLs using the special station in Seoul join the 222 net, just as the DXpeditioners do.

The frequency is 14.222 so let us see you there, soon.

Our April luncheon at TG's on North Terrace.
L to R Christine VK5CTY, Myrna VK5YW, Tina VK5TMC, Maria VK5BMT, Shirley VK5JSH and Sue Mahony.

Silent key

John Elton VK3ID

John Elton VK3ID became a silent key on the 18th April 2004, after a short but severe illness.

John was born in Melbourne on 30th October 1917. He attended Canterbury State School, and later 5 years at Scotch College. Though his great love at school was chemistry, he was unable to continue that passion as a career, due to the uncertain job prospects caused by the depression, and the threat of war.

Instead he worked for his father in the paper merchant business of Tullis Hunter and Co, a paper importer and wholesaler. He later went on to be General Manager of that Company, and after early retirement in 1972, he went on to manage the Marketing Department at Brown Brothers Winery until his second retirement in 1989.

In 1940 he enlisted with the CMF, and later in 1942 transferred to the AMF. In June 1940 he was sent as a member of the 54th company in the AASL (Anti-Aircraft Searchlight Co, R.A.E.) division to Darwin, where he was an important member of the team which installed around Darwin anti-aircraft searchlight facilities at Dripstone, McMillans, Talc Cove, Flagstaff Hill, amongst others.

On 9th February 1942, Dad was in the ration boat, returning from one of their many trips to the outlying searchlight stations, bringing food and supplies. I quote from his memoirs – "... the ration boat was returning from a run to Flagstaff Hill. It was quite a sight to see the Neptunia explode before our eyes and to see the USS Peary sink with her guns ablazing. Just before the finish of the raid, two Japanese aircraft took a pot-shot at us too, but fortunately they missed. ...Amongst the ships sunk were the SS Mauna and the USAT Meigs. Their crews had manned their lifeboats and we took them in tow, making very slow progress to our jetty". Many people in Darwin that day, and during later raids, were not that lucky nor so brave.

Not long after returning to civilian life in 1945, Dad became interested in radio and amateur radio in particular. After a long struggle trying to pass the CW exam, he finally became licensed in 1952, and began what was to become a lifelong love of amateur radio.

He was a keen operator on 40 and 20 metre, loved DX, and later on was active on 2 metre AM. He was a keen home brewer, and built all his own test gear including CROs, GDOs, noise bridges, signal generators, etc. SSB exciters, linear amplifiers, a Deltahet receiver, were some of the many projects which he built over the years. He was on the Amateur Radio Publications Committee in the 1960's.

At the young age of 80 (1997) he discovered the world of computers, and this opened up a whole new world of discovery for him. Over his last 7 years he immersed himself in computer related projects such as AR digital modes, digital photography, probing and utilising the Internet and emails, restoring and recording on CDs, old 78s and 33s, (particularly Jazz) and of course his last great passion, studying the genealogy of his family.

Just prior to the onset of his illness in January, he was preparing to restore, digitise and archive all of the super 8 films he had taken back in the '60s.

Dad, John VK3ID, was an inveterate enthusiast, meticulously documenting all the work he undertook in all his many hobbies, and passionate in what he did until the last.

To my mentor, peer, Dad and mate, thanks and 73.

Peter Elton VK3KG

Technical Abstracts

Peter Gibson VK3AZL

Delayed turnoff fan control

Proper ventilation of electronic equipment has been a design issue for professional engineers and radio amateurs for may years. In QST for July 2003, Glen Thomas, N8AKS describes a delayed turn off fan control to keep equipment cool, but only when required.

Adequate cooling has become more important with the advent of solid state devices and the resultant miniaturisation of equipment. In many cases, natural convection proves to be inadequate and it is necessary to resort to forced air cooling to remove the heat. Every solution carries its own disadvantages. In the case of forced air cooling, the introduction of a fan adds audible noise, increased power consumption and reduced reliability as it is expected that mechanical devices will fail before the other system components.

The fan control circuit described here was designed and built for use at a repeater site. Whilst noise was not much of a problem in this case, reliability and power consumption were important.

The fan controller circuit is shown in Figure 1. It consists of a retriggerable monostable oscillator (one-shot) controlled by an op-amp used as a comparator that senses the state of the push-to-talk (PTT) signal generated by the repeater controller. The output of the one-shot gates a power MOSFET into conduction or cut-off, which, in turn, applies or removes power to the fan. An internal power supply provides filtered and regulated voltages for the various active devices. Two LEDs are included to provide POWER ON and FAN RUNNING indication.

During idle times, the PTT signal applied to the positive input of comparator U1 is higher than the reference voltage applied to the negative input (3 V). Under this condition, the output of U1 is high, and, when applied to the input of the 555 (U2), holds its output low. This corresponds to the fan being turned off.

When the repeater is keyed, the PTT signal goes low, forcing the output of U1 high. Timer U2 responds by going high and causing the MOSFET Q4 to turn on and power the fan. Whilst the transmitter is keyed and the output of U1 is low, transistor Q2 is biased on which stops capacitor Q10 from charging. This causes the monostable to be continuously retriggered, resulting in the fan running whilst this state exists.

When the transmitter is unkeyed, the output of U2 goes high, transistor Q2 is

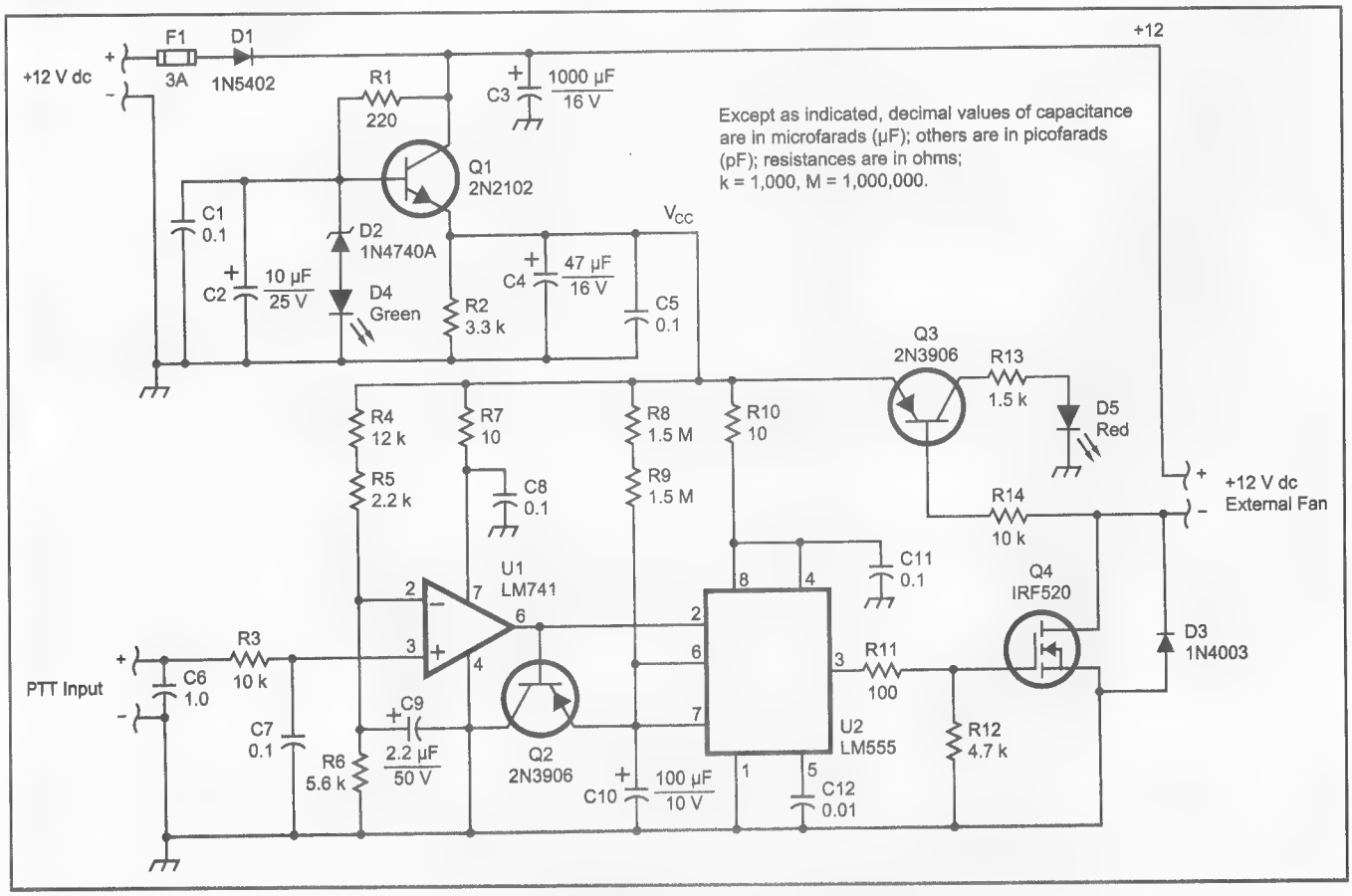

Figure 1 – Delayed fan controller schematic

biased off, which allows C10 to charge via resistors R8 and R9. The values of these components were chosen to allow a time out period of 4-5 minutes, after which the output of the monostable goes low, turning Q4 and the fan off. Because of the long period involved, C10 should be a tantalum capacitor as it exhibits lower leakage. Additionally, 1% tolerance metal film resistors were used for R8 and R9.

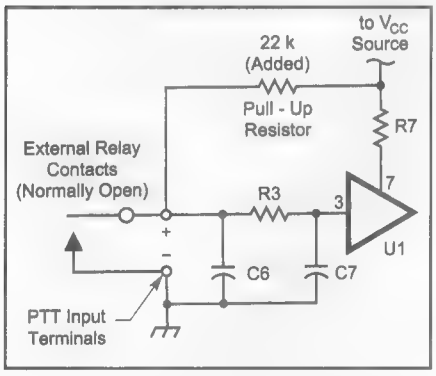

Figure 2 – Additional 22k resistor for 'Dry' input

The internal power supply consists of Q1 and D2 and provides a stable 10 V supply for U1, U2 and Q3.

The layout and construction is not critical, with the original being built on a small piece of perforated board. The heat dissipation of Q1 and Q4 should be low enough to not require heatsinks. However, if the system is expected to operate in high temperatures, it may be useful to install small heatsinks on each transistor.

If the PTT output of the transmitter is a 'dry' contact, it will be necessary to add a 22k resistor as shown in Figure 2. Likewise, if it is required to operate a fan that is other than 12 V, such as a mains unit, an alternate output circuit is shown in Figure 3 where Q4 operates a relay instead of the fan directly.

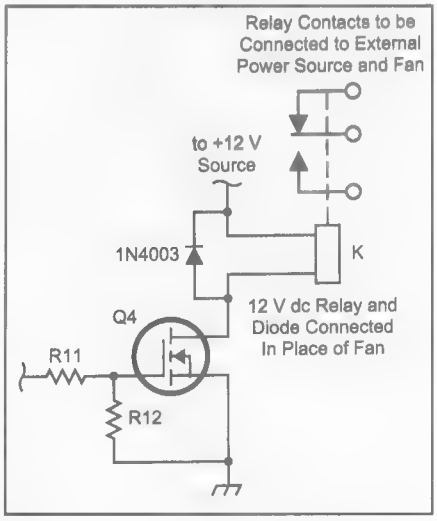

Figure 3 – Relay output for other than 12 V fan"

Silent Key

Mike Walton VK2MJ

Mike Walton VK2MJ passed away on 22 April 2004

He was born on the 28th May 1945 in Yorkshire in the United Kingdom.

As Mike put it, he arrived here as a 10 Pound Pom on the10th September 1969. He married Prue Budden on the 4th April 1975 and the two of them recently celebrated their 29th wedding anniversary at Darling Harbour They have 3 sons Gavin, Julian and Stewart.

Mike was very community minded as he was a member of:-

Westleigh Rural Fire Service

WICEN Sydney North Region

Mike also was a member of a group which maintained the Dural site of the Wireless Institute of Australia

He also provided a service so that country and interstate HF packet radio operators could tap into the Sydney 2 metre packet network and thereby access overseas packet operators via The Macquarie University gateway.

He also made many friends when helping the Scout movement with their Jamboree On The Air in October each year.

Mike obtained his licence with the Sydney Radio Group who used the Ron

Bertrand Video Tapes. Mike was pleasantly surprised that he obtained his full call at his first attempt. He was not that impressed with Morse code and after he passed the exam, he nailed the Morse key to the wall of his radio shack.!

Mike was very technically minded even though he was not a technocrat like many Amateur operators, and he put them to shame the way he got stuck into and mastering NOS and then Linux!

He was a member of the Hornsby and District Amateur Radio Club as well as the Sydney Radio Group (now defunct)

I have never seen Mike without a smile on his face and he also had his familiar infectious laugh. Mike should have been born with a wooden spoon in his hand as he was always the "eternal stirrer"

My wife caught him at it, at a Sydney Radio Group DXpedition at Hampton in the Blue Mountains. Some one had said some thing and Mike, always the stirrer, put his tuppence-worth in. When Rose picked him up on this he said "I like dropping a stone into a still pond and watching the ripple effect!" Most of us were not even aware that he was doing this !

He was always helping others, and if a newly licensed amateur had no radio gear, Mike would lend him a transceiver until the new amateur had saved up to buy his own. Mike was a bricklayer by trade and built his own house on the side of a picturesque gorge in the Hornsby area. He was always hard working and his family always came first, last and foremost.

Thankfully Mike's illness was quite short with a minimum of suffering , and he passed from this life with his characteristic minimum of fuss.

Farewell, Mate !

Garry Barker VK2TSR

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The Newbridge Group:

The No Code influence on amateur bands

Chris Wright VK2UW & Karen Wright VK2HKW

The Newbridge Amateur Radio Group was formed on 17th September 2003 in order to obtain a licence for a 2 metre and 70 cm voice repeater at Newbridge to enhance the coverage that amateur radio Repeaters have in the area.

The licence, VK2RLH, also covers the facility of linking the repeater at Grenfell via a 70 cm link and has an allocation for a 2 metre packet digipeater.

Following the opening of HF bands to limited licence holders on 1st January 2004 two of the Newbridge Amateur Group members, Lindsay VK2TLH and Tom VK2TDM, who had been trying various means to establish an afternoon discussion with Greg VK2TGP decided to give 40 m a try. With distances between of well over 100 km, it looked like 40 m might be the best at 4 pm.

The first day, 6th January 2004 at 4.00 pm, on 7.085 MHz, there was Tom, Greg and Lindsay. The trio had success with their yarn for a few days, then on the fourth day, 9th January, James VK4XJB joined in and asked if this was a net/ group. On the spur of the moment Tom VK2TDM said it was the Newbridge Amateur Radio Group discussion time, and it was from this day that the 4 pm discussion continued. During the next week the original group was joined by on average ten other amateurs and on 17th January this had grown to seventeen.

To keep some order it was decided to have a Group Controller and young Tom VK2TDM happily volunteered for this very important job. He has kept things rolling every weekday since. The group runs at 4 pm every weekday. Weekends are for Tom to regain his voice.

After running for 14.2 weeks there had been 1,318 call-ins: 116 full calls, 36 combined calls and 60 limited calls. Considering that it was conceived just so a few limited calls could take advantage of the newly gained privileges on HF, it has been an unqualified success, with now well over 211 individual stations calling in. The greatest number in one afternoon has been 34. On the Newbridge Group on the 16th April on Frequency 7.085, we had the pleasure of Ron Bertrand VK2DQ who gave a brief but very informative talk on the Radio Electronics School.

This was well received and found very informative by all that attended the net.

It is good to note the operators are receiving feedback from SWLs by SMS, mobile phone and QSLs.

Ron VK2DQ explained the intentions of the Radio Electronics School and the rewards for those interested in amateur radio. He included talks on certificates that are and have been available to those willing to give up an hour each day to study.

Ron compared costs of doing classes with going to TAFE to do a similar course, also the length of time needed to achieve the same results.

The Newbridge Group hope Ron VK2DQ can do this on a regular basis, as when Ron was talking there was complete silence from all those listening with great interest.

Past students came up after Ron's speech and thanked Ron very much for helping them obtain a licence. Others took down the contact details so as to pass on to mates etc, to be part of the school.

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VK2 News

Tim Mills VK2ZTM.

Hello there. The VK2 AGM was held, as scheduled, on Saturday 17th April 2004, at Amateur Radio House, the Parramatta based offices of the NSW Division. Fifty members were in attendance and 156 proxies received. The meeting opened on time and quickly dispensed with the minutes of the previous meeting and the various reports for the past year. Returning Officer Peter VK2EMU reported to the meeting that only eight nominations were received for the nine Council positions. They were Adrian Clout VK2BFN, Michael Corbin VK2YC, Chris Flak VK2QV, Terry Davies VK2KDK, Brian Kelly VK2WBK, Noel May VK2YXM, Norman Partridge VK2TOP and Terry Ryeland VK2UX.

Peter O'Connell VK2EMU was re-appointed Returning Officer with Kevin Dawson VK2CKD as alternate Returning Officer. The present Auditors, Casey Bates, were re appointed.

The meeting then dealt with the two Special Resolutions and one motion. The first special resolution, to amend the Memorandum and Articles of Association to allow the use of email to distribute annual reports and notices of general meetings, was agreed to by the meeting. The second special resolution to fix the quorum of a meeting as a percentage of the membership (3%) was agreed to with the lower limit being ten members. A break was then taken.

After the meeting resumed the President Brian VK2WBK presented awards to members with 40 or more years with the NSW Division. They were John Bishop VK2ZOI, Col Christensen VK2BCC, Dean Davidson VK2ZID, Stan Dogger VK2KSD, Owen Holmwood VK2AEJ, Aub Topp VK2AXT and Brian Warren VK2BX. Members of the NSW Division with 40 or more years of membership are reminded that they may apply for these awards by writing to the Division, outlining when they joined and activities during their period of membership. A register is maintained and presentations are made at intervals.

A Federal award, Certificate of Thanks, was presented to Barry White VK2AAB, for services to Amateur Radio by Federal Secretary, Peter Naish VK2BPN.

Certificates of Appreciation were also presented to

Max Bowey VK2AFE for services to the Parramatta office.

Aub Topp VK2AXT for the library and historical display at Amateur Radio House.

Mark Blackmore VK2XOF for technical services to the Dural installation.

Tim Mills VK2ZTM for services to the Division and the Dural property.

Owen Holmwood VK2AEJ, retiring Councillor, for 5 years on Council and recently as Secretary.

John Vetters VK2JJV, retiring Councillor and Dural Officer.

Seppo Ahlstedt VK2SMA, retiring Councillor and Trash & Treasurer Officer.

Pat Leeper VK2JPA for general services to the Division and Past Secretary.

Jo Harris VK2KAA for services to the Historical Records of Amateurs.

The meeting then went on to the motion "that the NSW Division supports the single national WIA organisation". There was some discussion before the lunch break. After the meeting resumed, Jim Linton VK3PC, who was present as a visitor, was invited to address the gathering. The members then resumed debate on the motion (for some time) and added to the wording to give the Divisional Council authority to finalize negotiations. This national WIA topic is extensively reported elsewhere in 'Amateur Radio' magazine. Informal polling indicated that the VK2 membership, in general, favours a single national WIA, but there are reservations concerning the property and asset aspects of the Division. This appears to be a concern in some other Divisions who also have assets and/or property. The motion was passed. The new Council is continuing to address this

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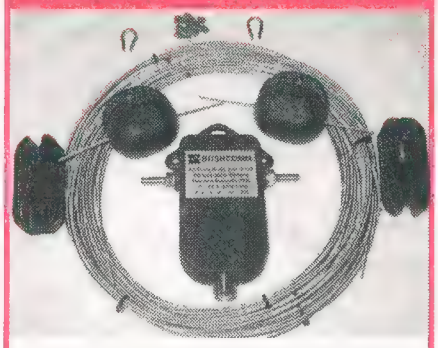

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Division News

matter. The meeting concluded with a short period of general business. Eric Fossey VK2EFY raised the position and status of the Dural Consolidation Committee, who had reported back to the Council. It was considered that the committee should remain in view of the present discussion re the future of the WIA. Peter Naish VK2BPN spoke to the meeting on his role in the IARU and Region 3. He had recently been re elected as a Region 3 director and had also become Chairperson of Directors for Region 3. The 2003/4 AGM concluded just after 3 pm.

At the new Council's first meeting at the end of April the following positions were filled.

President	Chris Flak VK2QV
Senior Vice President	Norm Partridge VK2TOP
Junior Vice President	Terry Ryeland VK2UX
Secretary	Michael Corbin VK2YC
Treasurer	Noel May VK2YXM
Federal Councillor	Chris Flak VK2QV
Alt Federal Councillor	Michael Corbin VK2YC
Affiliated Clubs Officer	Terry Davies VK2KDK
Deceased Estates Officer	Michael Corbin VK2YC
Education Officer	Terry Ryeland VK2UX
Publicity Co-ordinator	Chris Flak VK2QV
Dural Officer	Brian Kelly VK2WBK
Trash & Treasure Co-ordinator	Terry Ryelan VK2UX
QSL Bureau Liaison	Norm Partridge VK2TOP
NTAC Officer	Adrian Clout VK2BFN
Bookshop Officer	Chris Flak VK2QV
Membership Secretary	Terry Davies VK2KDK

There are various other workers and helpers within the Division. There is the need to fill the ninth position on the Council. The Parramatta office also needs assistance from members, able to access the location. Please check with the office on how you could help.

The next Parramatta based exams will be on Sunday 20th June, with the closing date on Tuesday 8th June. Contact the office. The next Trash and Treasure is at the end of July. The present spacing of the T & Ts is every two months. Some are questioning whether this should be altered to perhaps every three months. Comments please to the T & T Co-ordinator, Terry VK2UX. The Conference of Clubs, scheduled for a May meeting, has been deferred until there is more finalization in the national WIA debate. Don't forget the Oxley Region field day at Port Macquarie during this month's long weekend. The Divisional Bookshop is scheduled to attend on Sunday. In late April, the Division's web site came under a 'spam' attack, which may have caused some mail to be lost. If you have difficulties by email, remember the other methods of contact with the Division. Check the Directory at the back of this issue of AR for details.

We are always saddened to hear of 'Silent Keys'. If you are reporting a Silent Key please send it to the Parramatta office so that the details may be included in the VK2WI news sessions, as well as adjusting records. We ask that you also send a copy of the details to this magazine, 'Amateur Radio' for inclusion.

The VK2 BOOKSHOP has placed an ad in the May issue of 'Silicon Chip' to expand the reach of its operations. The ad will run for a couple of months. For a catalogue of the Bookshop, check out the VK2 web site. You may have noticed the article in the May issue of "AR", re the EH Antenna. The Bookshop has a few, Italian made, EH Antennas. They are single band units and those available, as these notes were prepared, cover 160, 80, 40 or 20 metre. Make inquiries. While on the Bookshop, there are still a few copies of the 2004 Callbook. Also WIA log books, keyrings, watches and blank QSL cards for those 'rare' contacts that you wish to confirm. Those items are in addition to the many titles and CDs now being carried. There are monthly issues of the ARRL - QST magazine, which even with postage from the bookshop, is better than the newsagent price. Use email or call during office hours as shown in the Divisional Directory.

VK2WI is hopefully out of the lightning season for a while. The VK2RSY beacons on 2 and 70 remain off. Some recently acquired equipment may assist the 70 cm beacon to co-exist with the repeaters. We are still looking for a designer/builder for a 2 metre beacon. Work is being planned to overhaul the antenna systems. They have weathered well, but need some TLC to extend their useful life. Anybody into 'qualified' tower climbing? If so, please contact the office. The overall coverage from VK2WI is going well. The evening transmissions on both 80 and 40 are reaching many parts of the country with callbacks at times on 80 exceeding the morning roundup on 40. Keep listening, we have the news.

73, Tim VK2ZTM.

GippsTech 2004 3-4 July

GippsTech 2003, which had amateurs in attendance from VK1, 2, 3, 4, 5 & 7, was the sixth successive symposium; the event has been organised by the WIA Eastern Zone Amateur Radio Club each July since 1998, and yes, it will be on again this year.

GippsTech 2004 is being held on 3-4 July and promises to be another successful meeting of those amateurs who are interested in the top half of the spectrum. We are still looking for further speakers for this year's event so if you would like to present a topic, please email either Peter Freeman (peter.freeman@sci.monash.edu.au) or the club through its website at www.qsl.net/vk3bez with details of your proposal. Look forward to seeing you one and all at this year's conference.

Avid Microwave operators at GippsTech 2003

VK4 News

Qnews

From Alistair Elrick VK4MV

Gold Coast Q5

The Gold Coast Club has been presenting an Education Hour, called *Q5*, consisting of segments of interest to radio amateurs and general audiences. This is a group effort, led by Ron Bertrand VK2DQ, and Gold Coast listeners may catch it on the 146.950 Repeater VK4RGG each Wednesday evening at 2000 hours. Subjects covered so far include histories of the Marconi School of Wireless, the telephone and amateur radio; the search for extra-terrestrial intelligence and famous women in science. There have been discussions on amateur radio technology, such as Antenna theory, and Radio interference. Some interstate listeners may listen through their Club repeaters, as it has now been syndicated to various clubs in NSW, Tasmania and Western Australia.

Mount Pleasant Comms Report

The Mount Pleasant Horse Endurance ride was held recently under excellent weather conditions and good radio communications. Six operators from Townsville – Steve VK4JUS, Phil VK4HSV and Jan, Wayne VK4YWG and Kate, John VK4KN and Ray VK4LU helped in the smooth running of the endurance ride of 25 participants from Townsville, Bowen and Mackay.

Communications support was provided on VHF with most stations also having backupHF transceivers. Unlike previous years most operators slept off base prior to the event but most had to wake at 3 am to receive the competitors list. Stations were battery powered with most sporting omnidirectional antennae.

The Riders Safety Briefing was pretty impressive with the emphasis being the well being of the horses. Everything went well at Mount Pleasant Station, no riders or operators were lost and the Townsville operators were invited to meld with the Mackay operators at the next Pioneer Valley Endurance Riders event.

Quoll Adventure Race Comms Report

In May 104 competitors slogged through soggy rainforest, boggy tracks, slippery slopes and alpine lakes during the 2004 Quoll Adventure Race. The on-course medical teams only had to deal with minor injuries, no teams got horribly lost and the communications support supplied by Far North Queensland WICEN operators was second to none. Operators included Dale VK4DMC, Chris VK4ANI, John VK4JKL, Bill VK4WL, Lyndall VK4ZM and Gavin VK4ZZ at checkpoints over the 3 days and Dale VK4DMC, John VK4TL, Ron VK4ZJR, Nick VK4YT, Dave VK4ADW, Mike VK4AMO, Ross VK4AQ, Bill VK4WL, John VK4DJS and Adrian VK4NAL manning Quoll Base.

To quote Quoll Communications Leader Dale VK4DMC: "...The Quoll management team were extremely grateful for our assistance and have asked me to pass on their thanks. Good comms helped to make the event the success it was. On a personal note I would also like to thank all who participated for input and help, it made my task as organiser just so much easier..."

WICEN communications shone when a number of service vehicles got horribly bogged on Glen Gordon Station and Co-ordination between recovery vehicles, a helicopter and people on scene was required. This and the myriad other communications tasks kept the WICEN operators busy from 6am on Saturday May 1st until 4pm Monday May 3rd.

Field operations were battery powered with most operators raising dipoles to ensure reliable communications, which - due to the terrain and vegetation - had to be mainly conducted on 80 m and 40 m HF. Closer range communications to the west of Quoll Base were also conducted on VHF.

Dale VK4DMC asks that if participants have any ideas on improvements to the communications support for the next Quoll to please contact him.

73s from Alistair

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Andy VK3IV

Division News

VK6 News

Compiled by
Will McGhie VK6UU
Input to: will2@iinet.net.au, 08 9291 7165

VK6 and the National WIA

The VK6 council has for the past few months been deep in discussion about the move towards a National WIA. At the moment, the WIA is a Federal structure and many feel it would be better if the WIA became a National organisation. The VK6 Council has long supported the move to a National WIA, and the VK6 council believes that the majority of VK6 amateurs, both WIA members and non-WIA members, support a change to a National organisation. However at the VK6 AGM, members voted against the proposals as presented. The vote was not against the concept but the detail. A great deal of work has gone into drawing up a new constitution and other documents that work through just how such a complicated change would take place.

What has taken many VK6 amateurs by surprise is the speed at which the proposed changes would take place. The proposed timetable is to dissolve the Federal Divisions with members resigning and joining the National organization all by midyear. The VK6 council has had to work through many issues. There are a considerable number of activities that the VK6 council performs that members may not be aware of. Many of these tasks are "housekeeping" such as administering club insurance, educational classes, invigilators, licences, news broadcasts, our web site etc. It is important that we do not wind up the existing structure before we all understand just how the new structure would take over.

The intention is for there to be local advisory councils throughout Australia that report to the National WIA board. These local councils (committees) advise the board (directors) on local issues. It could be said that the new structure is much like the existing structure but the difference is the National board is not state based.

Amateurs elected to the WIA board are so elected on the business skills they can offer to the WIA and Amateur Radio. Yes, we may end up with a WIA board made up of Eastern Staters, but if that is where the best skills are then that is what is best for amateur radio in Australia. It would not make any sense, once we acknowledge the need for change, to have a board that acts other than in the best interests of all Australian amateurs.

Michael Owen, who is largely responsible for writing up the proposed constitution and other documentation, flew to Perth to talk to all VK6 amateurs.

Meeting with Michael Owen and VK6 Amateurs

This meeting took place at the Westrail building in East Perth (see photograph). The attendance by VK6 amateurs was poor considering the importance of such a meeting. The meeting directed the VK6 Council to accept the new National structure, even though there were still many outstanding issues. There were some at the meeting that had reservations about the move and the VK6 council is discussing their concerns. There is a deadline to have a vote on this important issue and this will have taken place by the time you read this.

From the VK6 council's position, this has proved to be far more complex than perhaps first thought. With council being faced with nuts and bolts issues, sorting through the mechanism for such a radical change has required a lot of discussion and thought.

In passing, the VK6 AGM was held and Neil Penfold VK6NE was narrowly re-elected as Divisional President. Congratulations Neil, perhaps our last Divisional President.

Intruder Watch

Henry VK8HA
Box 619, Humpty Doo, NT 0836.

The 24 MHz Codar is still at very low level and no interference to DX Work in Humpty Doo..

The 14 MHz Intruder problem is on the improve. First week in the month, the "Chinese Packet / OHR?" shut down the transmitters on 14.025 MHz and 14.045 MHz and were still not heard at the end of April.

There was a 'new type' of packet heard on 14.025 MHz for a couple of days. Did sound like packet with short bursts of traffic every five or ten minutes or so. No identification heard. After he finished, the frequency was left in a 'no interference' mode.

The 'Asian CW' is still around and can be heard on 13.999 MHz moving up to 14.004 MHz. Good CW Practice !

On 14.084 and 14.098 MHz multi channel digitals from PY still very strong in PH57NK on 14.1 and 14.105 MHz Indonesian SSB intruders, but generally the band is free from Indonesian Intruders, generally they will be found on the 10.1 and 7 MHz bands which is a 'great joy' to radio amateurs on 14 MHz band.

Due to problems at octa4 / iinet , no incoming email has been received for a couple of months, so no reports from VK6 and VK4 this month either. Tried to join the BIGPOND, but they are also 'cluttered up' with viruses and their machines can not accept any 'work'. No Logs have been received via Australia Post either.

Hoping this will find the right spot.

ar

VK1 News

Forward Bias

Peter Kloppenburg VK1CPK

In addition to the second and fourth Tuesdays of the month, when the Farrer hamshack is open to visitors, it will also be open on the following Wednesdays evenings when Graeme Wilson, VK1FXL, provides help and assistance to aspiring radio amateurs studying for their NAOCP and AOCP examinations. Those who are using Ron Bertrand's on-line study course or Graeme Scott's text books can get assistance from Graeme with the theory and practical aspects of amateur radio using the whiteboard or radio equipment available in the hamshack. Graeme can be contacted by phone on 6291 2101 or mobile on 0419 342 555, or email on fxl@fxl.com.au

It is always useful and interesting to visit the ACA Website, www.aca.gov.au While browsing through the various sections of the amateur services section, I came across newly specified definitions of **Spurious Emission Limits for Amateur Stations**

Amateur operators must also comply with International Telecommunication Union (ITU) requirements for amateur stations. The maximum permitted spurious emission power level is calculated by subtracting the following values of "attenuation" from the transmitter power supplied to the antenna transmission line.

Type of service	Attenuation (dB) below the power supplied to the antenna transmission line
Amateur services operating below 30 MHz (including those using SSB)	43 + 10 log (*PEP*), or 50 dB, whichever is less stringent
All other amateur services	43 + log (*P*), or 70 dBc, whichever is less stringent

where *P* = mean power in watt supplied to the antenna transmission line.
PEP = peak envelope power in watt supplied to the antenna transmission line.

continued next page

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AR/6/4

VK1 News *continued*

Spurious emissions from any part of the installation, other than the antenna and its transmission line, shall not have an effect greater than would occur if this antenna system were supplied with the maximum permitted power at that spurious emission frequency.

It is not easy to measure these power levels unless you have access to a spectrum analyser, a tuneable RF voltmeter, or a spare communications receiver. Given a transmitter output power of 100 watt, log 100 = 2. Adding this to 43 equals 45. This means that the spurious level should be at a level of 45 dB below the level of 100 watt. That is, it should be less than 3.162 mW or 0.398 volts RMS in the coax feeder.

Another interesting item on the ACA's home page is the heading 'Review of Amateur Service Regulation'. Clicking on the heading presents all the details of the responses received last year from radio amateurs around the country. There were 1300 of them, all having widely different views about how amateur radio should progress in the future, and how the ACA should respond to the changes and challenges presented to it.

The next general meeting will be held on Monday evening, 28 June '04 at the Scout Hall, Longerenong St. Farrer, at 8.00 pm. Cheers.

VK7 News

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Divisional Web Site: www.wia.org.au/vk7

Divisional News

Just a quick reminder that the VK7 Divisional news broadcast is not only available on Sunday mornings at 0930 EST on a variety of HF, VHF and UHF frequencies but it is also available on the Internet at www.wia.org.au/vk7 and the text can even be sent to you via email.

The email mailing list allows anyone to register their email address and receive the Divisional Broadcast text and relevant Divisional news items free, via email. The easiest way to subscribe and receive the email, is to send a blank email to: vk7divisionalnews-subscribe@yahoogroups.com

Once you become a member of the group you can view and search the archived broadcasts. Membership is open to anyone and messages sent to the list are moderated.

Branch Meetings

North

The evening of the 14th of April saw a record roll up to our meeting held at the Launceston TAFE College. The evening's guest speaker was Trevor Briggs, VK7TB who is a former senior lecturer at TAFE. Trevor presented a very educational lecture on electronics and antenna theory fundamentals. Thanks for your informative lecture during the evening. Attending were several of Trevor's former novice class students and a credit they are to you Trevor!

South

BPL/PLC Trail in Hobart

On May 3rd, a group of interested and concerned Southern Branch amateurs attended the Aurora Energy building in Hobart, to hear about the small Broadband over Power Line (BPL) trial that is currently being undertaken by Aurora Energy.

A presentation was given by Piero Peroni, the Business Manager for the BPL trial and Adrian Wild, the Corporate Affairs Manager within Aurora Energy.

After the presentation an open, frank and positive discussion was held where, we as amateurs expressed our concern about BPL technology and Aurora expressed their reasons for trialing the technology. Fortunately, Aurora is happy to keep us informed about developments, futures trials, etc.

We expressed our disappointment in the limited trial that consists of 7 users in a small area serviced by underground cables and they acknowledged the limitations and that this trial is not the decision maker for their BPL business case. They are also investigating wireless technologies and fibre optics as strategies for delivering the last mile of broadband to consumer and are still assessing the options.

BPL Interface (white box) connecting a PC to the power socket and providing megabits of bandwidth. It brought up the NTIA Report on screen in milliseconds!

We were shown the boxes that connect the PC network card to the power socket and also inside the switch board where there is a distribution/repeater box. Unfortunately we couldn't get a look inside the substation!

Martin, VK7GN gave us an audible demonstration of the horrific interference on his portable HF receiver and I think all present agreed it wasn't good!

Just a reminder for those amateurs in Hobart, please keep your ear out for BPL/PLC type interference on the HF bands and keep a log of the interference that includes time/date/band/strength, and if possible record it.

Targa Tasmania and Subaru Safari

Targa Tasmania has finished for another year and the 20 WICEN members and friends from across the state made up the eleven teams that provided communications services at 41 locations around the state for the event this year. Jobs included mobile equipment installations, stage repeaters, SOS points and a stage start. Distances travelled by some teams exceeded 1,600kms, including snow covered highland roads on the final day!

One of the Targa Competitors at the Woodbridge Stage. The WICEN team never losing an opportunity to promote the hobby! Photo courtesy of Roger VK7XRN.

Planning has already started for the next major car rally event that the WICEN team helps with - Subaru Safari. It starts in Hobart on Friday 25th June and then heads into the forests for two days of rallying.

An additional challenge has been presented with a move at short notice from the usual location of the Plenty Valley to the deep Southern Forests around Geeveston. The WICEN team are looking at integrating internet technologies into the system to get communications back to Rally HQ at the Grand Chancellor hotel in Hobart, maybe with a radio link back-up via Bruny Island. The forest stages are not repeater coverage friendly, so some fancy linking will almost certainly be required.

Club News

North East Radio Club

The April meeting of NERC was a talk by Rob Gurr VK5RG, firstly on Sputnik 1 and then on wire antennas. This was well received by all in attendance. We thank Rob for his informative talk. Saturday 17th was the Club's annual Buy and Sell. This was a great success, with lots of equipment and money changing hands. Adrian VK5ZBR won the door prize of a $50 food and drink voucher from the Bombay Bicycle Club. Congratulations Adrian. The May meeting was a talk by Alex McCallum on the Pedal Prix. This is a cycling endurance event aided by Solar power. More on this next month.

The Club has obtained a supply of old telephones. The main item of interest in these is the LCD display. These are a 2 line, 16 character, large digit display. We will sell the complete phone for $5. There are many other useful items on the PCBs. This fits with our courses on the Atmel micro controllers. Possible uses for the LCDs are a volts / current display, SWR bridge or a shack clock.

The June meeting will be held on Friday 11th and will be a talk on Computer log keeping. July will be the club AGM. Please consider helping out on the committee if you have the time. Nominations need to be in by the June meeting.

Check the club web site for the latest on meetings and activities. http://nerc.vk5bbs.ampr.org

Once again we will be involved with the two Car Rallies in Adelaide. Rally SA over the weekend of July 31st and August 1st, and the Classic Adelaide November 17th to 21st. NERC and many other Clubs and volunteers help out with communications for these events.

NERC meets at the Ardtornish Primary School, Saarinen Ave St Agnes on the 2nd Friday of each month. Doors open at 7.30 pm.

David Clegg
VK5AMK Secretary

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Club News

Geelong Amateur Radio Club (GARC)

The GARC band invasion has commenced! By the time you read this the first monthly GARC band invasion will have occurred. May 23rd was marked as the day that members of the Geelong Amateur Radio Club (GARC) would come up in force in an effort to activate the many listeners. The band chosen on this occasion was 40 meter between 1030 hrs and 1200 hrs. after the various WIA and associated broadcasts. I hope you were lucky enough to work a participating station. If not listen for the next GARC band invasion. Members will invade a selected frequency band from 80 metre through to 70 centimeter once a month or thereabouts.

The club station will be active (VK3ATL a call sign well known on VHF) and stations will be home, portable, and mobile so join in meet some new ops. And there will be recognition of any station contacting 20 or more GARC stations during any 90-minute invasion.

April meetings were again well attended some highlights being an excellent presentation and demonstration by Doug (VK3TRD) from the Bellarine Secondary College of the work done by students in robotics and human powered vehicles and the GIGANTIC white elephant sale. The auctioneer Mike (VK3ASQ) was hard pressed for over two hours (190 lots) to redistribute 30% of the preloved goodies. At least two more sessions will be needed to move the rest, which includes some excellent rigs, parts, cabinets and more. The club also took the opportunity to express our approval of the National WIA plan to the Victorian and Federal bodies by both email and snail mail.

Look forward to meeting many of you on the next GARC band invasion

Dave Godfrey VK3AZX

Port Macquarie Field Days

On 12th and 13th of June, Queens Birthday long weekend the Port Macquarie Field Days are on once again.

Members of the amateur radio fraternity are invited to attend, the venue being at the Sea Scout Hall in Bulla Street, on the Western Side of Kooloonbung Creek next door to the Country Comfort Motor Inn.

Early Arrivals may wish to drop in to register and have a social chit chat or a snack comprising a sausage or steak sandwich and a can of soft drink, tea or coffee.

There will be two practice Fox Hunts in the afternoon and a 2m talk on Fox Hunts after the evening snack.

Sunday there will be a display by leading suppliers of Amateur Radio Equipment and tables of used Amateur Radio

Equipment and other items for sale

Trade Displays, Fox Hunts, Raffles, Disposals, Door Prizes, Prizes for the Best Amateur Radio Vehicle,

Barbecue Lunch on the Sunday and Free Tea and Coffee with Fruit Salad and Ice-Cream included in the Registration Fee and Soft Drinks will be on Sale

Registration Fee is $10 for Men $7 for Ladies and $5 for School Age Children

Contact Details for any queries Bill Brooke VK2ZCW phone 02 65810547, email cabrooke@tsn.cc

So come and enjoy the beautiful sights of Port Macquarie and mix with the Local Amateurs of the Oxley Region Amateur Radio Club.

Adelaide Hills Amateur Radio Society

The talk given by Jim VK5JST will have inspired a number of members to get busy with their circuits and soldering irons. He showed us just what could be done using Pickaxe chips. These are clearly designed to be used simply. Instead of trying to make things seem as difficult as possible to show off their cleverness, the designers of these chips have gone out of their way to make them cheap, simple to use and to have many applications.

There was an interesting and interested guest at this meeting, Norman M0CRM. He is the vice president of RSGB for his area, a local councillor of long standing and a radio amateur – quite a few 'hats' to juggle. He had been contacted by Shirley VK5JSH on Echolink and invited to come to the meeting while he was in Adelaide. In fact I understand he visited several other clubs in VK5 on which he will, no doubt, report when he returns to the UK.

He also attended the AGM of the VK5/8 Division just before his flight, so he will be well and truly up-to-date with VK doings.

At the end of the AHARS meeting Norman presented the club with a plaque to commemorate the occasion. This will be hung where it will be seen at all future meetings and whenever the club participates in any outside activities. I believe similar plaques will be on show at other club activities. A nice gesture by a pleasant visitor to our shores.

Another activity for AHARS was the removal of the tower for Clem VK5GL. Clem will be very well-known to amateurs for his skill in crystal making and for his achievements in long distance contacts on VHF. He held the first QSO on 2 metre between VK5 and VK6 with Rolo VK6BO back in 1951. This contact was 2164 km, just short of the world record of 2253 km. Over the next few years, whenever the weather front was suitable similar contacts across the Bight were made.

The AHARS one is of the plaque with the RSGB badge on it, given to the club by Norman M0CRM

Clem has been very active over many years in VK5 on ATV and although the club members (at least 15 turned up!!) have now removed Clem's tower and all the DX and VHF/UHF beams from the tower, he has still retained his verticals, so he will still be in touch and be able to watch ATV, as usual. Listen out for him, he would love a contact.

Christine Taylor VK5CTY

Waverley Amateur Radio Society

Annual Club Auction

The club will be holding its annual auction on Saturday, June 19th at the clubhouse in Vickery Avenue, Rose Bay, Sydney. Gates open 8:30 and the sale starts at 10:30. Goods consist of useful ham radio, computer and electronic gear and it is open to all wishing to buy or sell. Full details are available on the club's web site at www.vk2bv.org or by phone from Simon VK2UA, on 02 9328 7141.

GippsTech Ladies' Program

Pauline Corrigan

Ladies, it's the time for me to plan our days.

My name is Pauline Corrigan and I organise a tour of the Gippsland area for the wives who accompany their husbands to Gippstech every year.

As our group grows every year and husbands joke about coming too, I believe it is an important aspect of GippsTech.

Well this year is coming up fast, and plans are well in hand for our tour. I don't think Mike will decline the offer to be our driver as he appeared to enjoy our company last year, although we may need a bigger bus due to the popularity of our group. So ladies, please if you could let me know in advance that would be excellent. My email is tcorrigan@vic.australis.com.au Last year we had a full bus.

Also is there anything else YOU would like to see or do. I thought you might like to do a visit to Rosedale on the Sunday, as there are a lot more interesting shops now, and Wendy T's serve a lovely morning tea . Also Sunday market. Anyway I am open to suggestions, so let me know what you would like and I will attempt to provide the best time yet. It will be good to catch up with you all, and some new faces too.

Last year's happy throng

Let's hope the weather is nice to us. I'll try to book any rain for Monday.

Okay. Hope to see you for tea at the top pub on Friday night. For the campers I have spoken to the council re caravan parks, so hope for positive feedback this year..... See you soon

AMSAT

Bill Magnusson VK3JT

Interesting new projects scheduled for ISS

Development of the ARISS systems has been more or less put on hold until the resumption of the Space Shuttle flights, hopefully in 2005. This does not mean that things are stagnant however. Planning continues apace. It has been reported recently that a meeting of the International ARISS committee at the European Space Agency in the Netherlands has given a starting approval for two new projects involving amateur radio on the International Space Station. The first is a Russian project called "Shadow". It is an experiment that is designed to test the possible ill effects on radio signals of a plasma propulsion unit. The outcome of this experiment could be influential in the future planning of plasma propulsion systems on deep space probes. If the plasma units are shown to have deleterious effects on radio communications it could mean a total re-design of the systems which are being touted as the way to the future for deep space exploration. Hopefully amateurs will be able to contribute through the collection of telemetry data from the experimental package. The "Shadow" project is fully explained on the web site of the Russian Central Research Institute for Machine Building at: http://www.tsniimash.ru/Shadow/default_eng.htm

You can register your interest in the project at the site. The second project involves the installation of a number of colour, fast-scan digital TV cameras on the exterior of ISS. The cameras will be capable of panning, tilting and zooming and will be controllable from a satellite ground station. This system will be coordinated in the UK. No information is yet available on the frequencies to be used for transmitting the TV pictures to earth. The encoding arrangements and the development of suitable specialised software for control of the TV camera(s) will be undertaken in the next stage of planning. Satellite users who have ground systems already operating on 70 cm and 23 cm will be ideally placed to take part in both these experiments.

Good news on VUSAT

Here is a clip from a message sent to the AMSAT-BB by William PE1RAH who was responsible for designing and building one of the mode-U/V transponder to fly on VUSAT.

"I just wanted to let the AMSAT-world know that testing has been resumed to get VUSAT 100% working and ready for launch. During the final testing last year some minor problems were found and the satellite could not be launched. I am back at ISRO in Bangalore to help with testing and to get the satellite in best shape for its launch summer this year. I cannot give any technical details and date of launch, but I want the AMSAT world to know that in the background a lot of work is in progress. The satellite will give hams two new linear mode-U/V transponders in an 800 km LEO orbit. 73 de VU/PE1RAH William Leijenaar in Bangalore, India".

VUsat or "Hamsat", as it is also known, will provide a most welcome boost to the fleet of satellites available for amateurs when it is launched later this year (hopefully).

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000 UTC with early check-ins at 0945 UTC. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900 UTC with early check-ins at 0845 UTC. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034

Graham's e-mail address is:
vk5agr@amsat.org

Coping with extreme Doppler shift

We may have to review our traditional methods of coping with Doppler shift variations when working with amateur radio satellites in the future. As transponder frequencies move ever higher to escape interference from non-amateur services we will be faced with a very different situation to that existing with the lower VHF/UHF modes.

In the early days of 10 metre downlinks Doppler shift would amount to just a few kilohertz during a satellite pass. The maximum rate of change, around the time of closest approach was relatively easy to counteract and signals were easy to keep in tune. Seventy centimetre downlinks introduced a situation where one had to be more attentive when conducting a satellite contact. Total Doppler shift variation amounted to 10 or more kHz and it made tuning that much more difficult.

With the advent of high orbit satellites like AO-10/13 many operators chose to limit their operating times to a period around apogee when the relative velocity of the satellite and your station made the Doppler variations easier to control. Indeed downlinks like modes "L" and "S" were scheduled "on" only around apogee to help this situation along. Mode "S" on a LEO is quite a difficult problem. You can see for yourself just how difficult by tuning your "S" mode receiver to the beacon on UO-11, which is still providing a weak signal source for those wishing to "tweek", their "S" mode apparatus.

The rate of change of Doppler is quite savage and would make the manual tuning of SSB signals impossible around close approach. It's even a challenge to maintain "zero-beat" when you first hear the beacon signal. The beacon is rather weak now but I can remember standing at my back door, holding up a 2.4 GHz

Technical Correspondence re "A Simple TV-aligned crystal frequency reference", AR April 2004.

An astute reader has pointed out that; for the device to produce strong harmonics through VHF, the 4060 CMOS chip must be of the fast variety, such as a prefix HC or HCT4060. That used in the prototype is a Philips HEF4060BP, which was purchased from Electronic World. An ordinary CD4060 may not do the job.

Bill Roper VK3BR

Publishing exam questions? (a)

If I navigated my way correctly through the circumlocution, Neil Trainor VK3IJ is suggesting we should publish the Amateur exam question banks ("Amateur Licence Exams - I had a dream", Over to you, April 2004.) Are we becoming so desperate for new blood that we want to make Amateur licences available to those too lazy to learn the basic theory, in favour of rote learning a predefined list of questions and answers?

It seems like only yesterday that we removed the Morse test requirement, certain that it was killing the hobby; now we want to dumb it down by removing the need to learn any theory as well? Neil's "food for thought" is giving me indigestion!

By all means issue sample papers that allow prospective amateurs to become familiar with the *style* of the exams they will face, but let's leave the parrot-style shortcuts to others. After all, does anyone not interested in learning even the basics of radio theory really deserve to call themselves a Radio Amateur?

Publishing exam questions? (b)

Since submitting my original letter, I came across an article by John Portune W6NBC, entitled *Is Your Club's Amateur Radio License Class Efficient?* which had appeared briefly on the ARRL web site, but which was removed after a few days. The article subsequently appeared on the FCC web site, at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516089602 (or email me at rmurnane.1@optusnet.com.au for a copy.)

The article details the "work" of W6NBC, who achieves an 85% pass rate on his one-day Amateur licensing course, not by teaching anything about Amateur Radio (he openly admits that he doesn't even try). Rather, his "students" cram the published question and answer pools for six hours and are then given the exams before they have a chance to forget what they have "learned." More details can be found at www.w6nbc.com.

The article at the FCC site is prefixed by the comment, *The following article is proof that the practice of releasing the test pool is a huge mistake ... The testing system is a farce.* While it is not clear whose opinion within the FCC is being expressed here, it's plain that parrot-learning question pools does nothing to improve the image of Amateur Radio in government circles.

73 Richard Murnane VK2SKY

Views expressed in the 'Over to you' column are those of the authors, and do not necessarily reflect the policies of the Wireless Institute of Australia.

Send contributions to: The Editor, Amateur Radio Magazine, 34 Hawker Crescent, Elizabeth East SA 5112 or email: edarmag@chariot.net.au

AMSAT *continued*

converter above my head with a 3.5 cm long piece of wire plugged into the "N" connector. The beacon was loud enough then to hear the signal nearly all the way across the sky on an overhead pass. Clearly something will need to be done in the future, as transponder downlink frequencies are forced higher by circumstances beyond our control. Several auto-tune solutions are available but it behoves us to gain our experience with these right here and now and not wait until we are confronted with a fleet of satellites that present a seemingly insurmountable problem.

A check of the AMSAT-NA web site and its links will reveal a number of systems to try and these should enable us to cope with most 2.4 GHz situations. Those operators contemplating a new radio should check the specs to see if they are compatible with the software or hardware approaches to this problem. Features like access to the radio's CPU and the degree of control over the "mic-click" increments can impact on your decision. An excursion into the 5 or 10 GHz bands (or even higher) will mean that even they are inadequate and a reversion to wideband modes and the introduction of exotic techniques may be the order of the day in the future.

AMSAT Phase 3E on track

Things are still moving along nicely with the planning of P3E at AMSAT-DL. The AMSAT-Phase 3E satellite (P3E) is dedicated as a communication and scientific platform for a highly elliptical orbit around Earth. The spacecraft will be created in a joint process together with the P5A Mars mission by an international team under leadership of AMSAT-DL and continues the successful series of AMSAT-Phase 3 satellites. Additionally the spacecraft will be a test bench for technology developed for the Mars mission.

The main task of P3E is to act as communication platform for radio amateurs worldwide. A launch is planned in the period 2004 to 2006. P3E will look rather like the AO-10/13 satellites in that it is being planned around the triangular platform pioneered in those satellites. Its many features are too numerous to detail in this column but you can see it all laid out on the AMSAT-DL web site. It will be a high orbiter like AO-10/13 but it will have a different kick motor. There will be transponders and beacons right through the range we have come to expect. The drive to complete this satellite is coming from AMSAT-DL's planned Mars mission, P5A and much of its technology will be tested on P3E.

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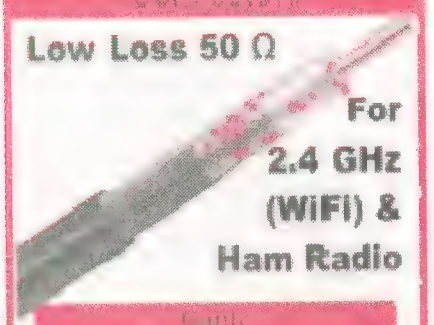

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Spotlight on SWLing

Robin L. Harwood VK7RH

Winter has certainly arrived with a vengeance here in northern Tasmania, which means I am spending more time indoors, listening to daytime propagation. One thing is noticeable, the buzzing noise that has plagued my listening ever since I moved in here, has disappeared. It looks as if the likely culprit was my next door neighbour's TV set, probably the switch-mode power supply. She died a few weeks ago and the offending TV set has been removed and the noise has also departed.

There has been a lot of comment about broadband Internet via Powerlines, (BPL) particularly within the USA. Elsewhere you will read that our sole electricity supplier here in Tasmania has been conducting experiments within their headquarters and in a street within Battery Point, adjacent to the office.

I believe the Southern Branch of the WIA recently inspected the experiment and you can find out the results elsewhere. However I do notice that the normal line noise here seems to resonate on certain frequencies, but I think has more to do with the impedance of my temporary antenna that the actual power wires in the street.

Radio Slovakia was originally scheduled to cease shortwave broadcasting on the first of May, but then it was announced that it would cease in July. Then the Media committee of the Slovak Parliament weighed in and stated that it was not a good idea to stop shortwave transmissions on the first day Slovakia became a full member of the European Union (EU).

The confusion continues regarding Kol Israel's shortwave transmissions. Most of us have heard it all before that Jerusalem will leave HF completely. This seemed to happen one day but it turned out to be one of the labour disputes that often happens within the Israeli public sector. I personally think Kol Israel will continue over shortwave.

I notice that at 1100 UTC, there is a broadcaster on 9408 kHz in an Asian language and the Far Eastern Broadcasting service from either Saipan or the Philippines on 9405 in Chinese. It certainly is an unusual channel 9408 and I wonder is it because Merlin is testing DRM on 9410 from a site in the UK. DRM does indeed need a wider than normal channel and it was originally proposed that transmissions in the digital mode would be on channels well away from the normal analogue senders. Incidentally DRM receivers are still not readily available, although I have seen that they might be at the end of this year on in the middle of 2005.

"VOA News Now " can be heard to East Asia on 17740 at 2200 UTC, although the VOA no longer targets Australasia. Radio New Zealand International is now on 15720 from 2200 to 0459. I did hear a station on 9515 kHz at 1150 with selections from Opera and identifying as "China Business Radio" in English and Chinese. This apparently is the normal domestic network.

On 30th June, Iraq is scheduled to regain their sovereignty from the Coalition Provisional Authority, although coalition troops will remain there to supervise security. I would expect that eventually we could hear Iraq return broadcasting via shortwave, particularly to the region. Incidentally the American sponsored "Radio Free Iraq" disappeared from shortwave on 24th April.

The Olympic Games commence on 13th August in Athens, Greece and this will be extensively covered over shortwave from a variety of broadcasters. Look out for special programming.

I am hearing a broadcasting station on 9330 at 2145 on Lower sideband (LSB) with reduced carrier with an assortment of religious and political programming. It identifies as WBCQ "the Planet" from Monticello Maine.

There is a rumour on the Net that Sony may be discontinuing manufacturing shortwave receivers. This does not seem to be correct as Sony is involved with the development of DRM receivers. Shortwave analogue transmissions will continue for some time, especially to Africa and Asia, although programming hours have been slashed to Europe, the Americas and Australasia.

Well that is all for this month. Don't forget you can email me mailto:vk7rh@wia.org.au vk7rh@wia.org.au.

ar

Ian Godsil VK3JS

Contest Calendar June – August 2004

5	June	VK/trans-Tasman Contest	(CW)
	see Web Site		
12/13	June	ANARTS Contest	(RTTY)
12	June	Portugal Day DX Contest	(SSB)
12	June	Asia-Pacific Sprint Contest	(SSB)
19/20	June	All Asian DX Contest	(CW)
26/27	June	Marconi Memorial Contest	(CW)
26/27	June	King of Spain Contest	(SSB)
3	July	Jack Files Contest	(CW/SSB)
11/12		IARU HF World Championship	(CW/SSB)
17	July	VK/trans-Tasman 160 metre Contest	(CW/SSB)
17	July	Colombian Independence Day Contest	(CW/SSB/RTTY)
24/25	July	Russian RTTY Contest	
24/25		RSGB IOTA Contest	
8/9	Aug	Worked All Europe DX Contest	(CW)
14/15	Aug	RD Contest	(CW/SSB/FM)
21/22	Aug	TOEC WW Grid Contest	(CW)
28/29	Aug	SCC RTTY Championship	(RTTY)
28/29	Aug	YO DX HF Contest	(CW/SSB)
28/29	Aug	ALARA Contest	(CW/SSB)

Greetings to all readers

Manners maketh the Man?

When I was growing up my parents and the school would present us with sayings or adages from time-to-time. At first these seemed strange, such as the one above, because of the unusual wording. However, we were told that they were sayings that would help to guide our thinking and actions as we matured. After a while the wording was not all that strange, because it was obvious what the words meant; it was just that the second person singular of verbs had gone out of use; but this did not seriously detract from the *meaning* of the word and the sentence.

I quote the above adage because (a) the purpose of such sayings has not changed, just that they may have dropped out of current usage; (b) a lack of manners in any aspect of life quickly makes itself evident and tends to induce a negative attitude toward the person/s exhibiting the bad manners.

As I wrote in this column recently, by all means devise techniques to get your signal across and log that extra station, but please not at the expense of you being regarded as showing no manners or concern for others also trying to call that station.

Recently in the John Moyle Field Day Contest I heard and worked on several VHF bands a club station in an outer area of Melbourne. On the one hand I was delighted to know that my signal was travelling across a large city (this is part of the function of a contest to test the efficiency of one's station), but I was far from happy about the method of calling employed by the station in question. In subsequent weeks some other hams commented that they thought xxxxxx "should learn some manners".

This is sad and need not be.

There is, I believe, a fine line between being motivated to do well and even being determined to achieve your end versus being bull-headed and giving the wrong impression to those listening. Any activity has its code of practice, and AR contests are no exception; but the philosophy of "if you don't like the rules, then get in there and change them" will not bring about your wish to do things your way without a good deal of antagonism being created among your colleagues. Worse still would be the idea of just barging in without any knowledge of the accepted protocol for that activity.

Please let us not lose our good name as amateur radio operators just because of a few changes in the rules governing the hobby. Please let us not forget that it is only a hobby, but courtesy and a continuation of time-honoured practices in conducting QSOs, whether in contests or in general, still are the mark of a well-balanced, concerned operator. This is known as "self-regulation" and is a duty of all of us. This way, we shall all continue to enjoy our hobby and help the less-experienced to come into our ranks too.

Continued next page

Beyond our shores

David A. Pilley VK2AYD
davpil@midcoast.com.au

Iraq

A widely publicized email from Laith Adhary YI1SRA in Baghdad asks the world's radio amateurs for support in keeping ham radio a part of a new Iraq. This, as the June 30th date for handover of the government to local authorities approaches.

Adhary is a member of the Iraqi Association for Radio Amateurs and works at the University in Baghdad. He says that it is urgent that Iraq establishes a viable ham radio program in the country before the shift of governing takes place.

To accomplish this, Laith and Iraqi Association for Radio Amateurs President Diya Sayah, YI1DZ, are asking hams around the globe and their national societies to send a letter of support for the future of the hobby in Iraq. Both men indicate that this is a time-sensitive issue and request support right away.

The best way to make sure your letter of support arrives is to send it by email We have two addresses. Sayah can be reached at yi1dz@hotmail.com and Adhary is at laithtariq@yahoo.com.

(ARNewsline 16/4)

Jordan

Robin Bellerby GM3ZYE is in the early stages of planning an amateur radio trip to Jordan. The excursion will take place either in May or September of 2005 and will be mainly - but not exclusively - for members of the United Kingdom's Royal Signals, Royal Naval, and Royal Air Force Amateur Radio Societies. Between 20 and 60 people are expected to make the trip.

(GB2RS)

Kenya

Ted Alleyne 5Z4NU, the Chairman and Secretary of the Amateur Radio Society of Kenya ARSK, has informed P29KFS that the Communications Commission of Kenya (CCK) announced on 2nd April a new and more relaxed policy towards amateur radio licensing. "Until now it was 'practically impossible' for most visitors to obtain an amateur radio licence in Kenya. All applicants' countries must have diplomatic relations with Kenya, at any level. The previous stumbling blocks for reciprocal agreements, Security and Police vetting, have been dropped entirely. Ted says that the ARSK will be happy to supply the new licence application forms and further information will be published on the ARSK website as soon as possible". CCK will verify all licences with the originating office by email.

Applicants must complete the new form on the CCK website www.cck.go.ke and submit photocopies of the licence and passport certified by a Commissioner for Oaths - no other will do. The fee is still K.Shs.3,000, about US$39 at present. Details on ARKS website at www.qsl.net/arsk It has been a 14 year battle to achieve this, and the relief is terrific! You can operate within weeks, not the 18 months to 5 years plus which was quite common. And Morse has also been dropped as a requirement. The rules are being brought up to date and documentation revised.

(Qnews 15/4)

U.A.E.

Kenya may have eased restrictions but in the UAE they still only license UAE nationals. Several US and European hams have tried to obtain a licence but that was in vain. Many travelers in the region hope that one day things get a little bit easier regarding the issuance of ham licences but most have given up hope.

(Qnews 15/4)

Ham Radio For Dummies

Yes it has arrived!

We've all seen the famous yellow books such as DOS for Dummies, Windows for Dummies, etc. Well now we have *Ham Radio For Dummies* written by Ward Silver N0ZAX. *Ham Radio For Dummies* extols the belief that hams do cool things like talking to folk around the world and helping with communications in emergencies. An ideal gift to give your neighbour who wonders about your tri-band yagi and why it rotates. Or of course, perhaps more important, a gift to yourself. On sale in the USA, no doubt the bookstalls in Australia will soon have copies available. More information can be obtained from www.rainreport.com.

(ARNewsline)

Rodrigues Island

Is Amateur Radio really on the decline?

The Rodrigues Island DXpedition topped 150,000 contacts before closing down on April 12. For their most excellent effort they received the ARRL Colvin Award. If you were one of the many VKs that worked 3B9C you may like to check out their web site at <http://www.fsdxa.com/3b9c/online-logs.html>. This DXpedition was sponsored by the Five Star DXers Association (FSDXA), with assistance from many others. QSL direct to FSDXA, PO Box 73, Church Stretton SY6 6WF UK or via the RSGB QSL Bureau. Much more information plus a form to request bureau cards is available on the 3B9C Web page <http://www.fsdxa.com/3b9c.

(ARRL N/L)

CONTESTS *continued*

Remembrance Day Contest

As I write these notes I am aware that it will not be all that long until this year's Remembrance Day (RD) Contest. I hope that now you will all start to check your stations ready for the "big night".

I have also heard that there may have been a delay in the issuing of certificates for last year, 2003. I am attempting to learn what has happened here and hope that I shall have more news for you next month. However, please do not let something like this deter you from entering what remains Australia's most popular contest – an event that has been referred to for many years as 'The Friendly Contest'.

Keep smiling and good contesting,

Ian Godsil VK3JS

Result Jock White Memorial Field Day 2004

VK section 1st VK2LCD 83 points

Peter Gibson VK3AZL

Easy to build 50:300 ohm and 50:450 ohm transformers

Simple wire antennas often have high resistive impedances, typically from 200 to 500 ohm. It is desirable to match these impedances to 50 ohm to take advantage of the convenience of 50 ohm coaxial cable.

Zack Lau, W1VT, in his RF column in QEX for Jan/Feb 2003 describes the design, construction and testing of such transformers.

If an impedance transformation as described above is required over a wide frequency range, a popular solution is to use a transformer with a ferrite core. The high permeability of ferrite allows less wire to be used for a given inductance, increasing the transformer bandwidth. However, increasing the permeability too far results in excessive loss. A balance needs to be struck for best performance. As transformers for 50:200 ohm are relatively common, the description here is for a 50:300 or 450 ohm transformer.

Other important characteristics of any transformer are its power handling capacity and loss. Both of these characteristics will result in core heating. If the core gets hot enough, its impedance will change, but it may be cooked in the process. The impedance change is easily detected as a slow rise in VSWR. Some cores will not survive this abuse. Their permeability may be permanently changed and the VSWR will not return to normal.

Figure 6 shows a broadband HF design. It has 9 trifilar turns of #22 AWG, PVC covered wire on an FT-140-61 core. It is tapped five turns from the high impedance output to provide transformations to both 300 and 450 ohm. The return loss is better than 16 dB from 3.5 to 30 MHz (1.4:1 VSWR). The return loss for a pair of back to back 50:450 ohm transformers at 30 MHz is just 0.33 dB. One method of calculating the toroid power rating is based on surface area and allowable temperature rise. For a 25 degree temperature rise a properly matched transformer as described above should be able to handle 45 W

A smaller transformer design uses 10 trifilar turns of 22 gauge PVC covered wire on an FT-114-61 core. The tap for the 300 ohm connection is 6 turns from the output. It has better than 19dB return loss from 7 to 30 MHz (1.25:1 VSWR) and 12.5 dB return loss at 3.5 MHz. The worst case insertion loss was at 3.5 MHz: 0.6 dB for a pair of 50:450 ohm transformers back to back.

Both designs are intended to be used with a 1:1 choke balun. A design that works well from 1.8 to 54 MHz is 16 turns of RG-58C on an FT-240-43 core.

The cores are wound with ordinary PVC hookup wire. The outer diameter of the #22 AWG wire is 0.058 inches, the #20 AWG measured 0.062 inches. The thickness of the insulation is important as it helps determine the impedance of the windings. Thicker insulation spaces the windings more, raising the impedance. Conversely, you can use thinner insulation for lower impedance windings. A recommended winding method involves winding and labelling each wire, one at a time. Assuming the labels don't fall off, it is then relatively easy to connect the windings in phase.

Once built, the transformers should be tested with an antenna analyser to measure VSWR. Suitable value carbon resistors can be used as the high impedance loads. The VSWR should be low from 3.5 to 30 MHz. A 4 or 5:1 VSWR usually means that the wrong tap point has been chosen for the 50 ohm input. If the optimum frequency range is too high, you need to add turns. If it is too low, remove turns.

You can measure insertion loss by hooking two transformers back to back, terminating them into a 50 ohm dummy load and measuring the power lost in the pair.

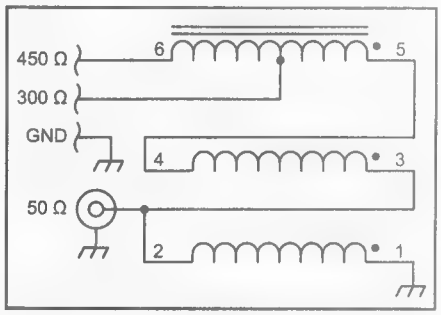

Figure 6 - Schematic of the matching transformer

Correction

to Figure 3, page 25 May AR - *An RF bridge for antenna measurements*

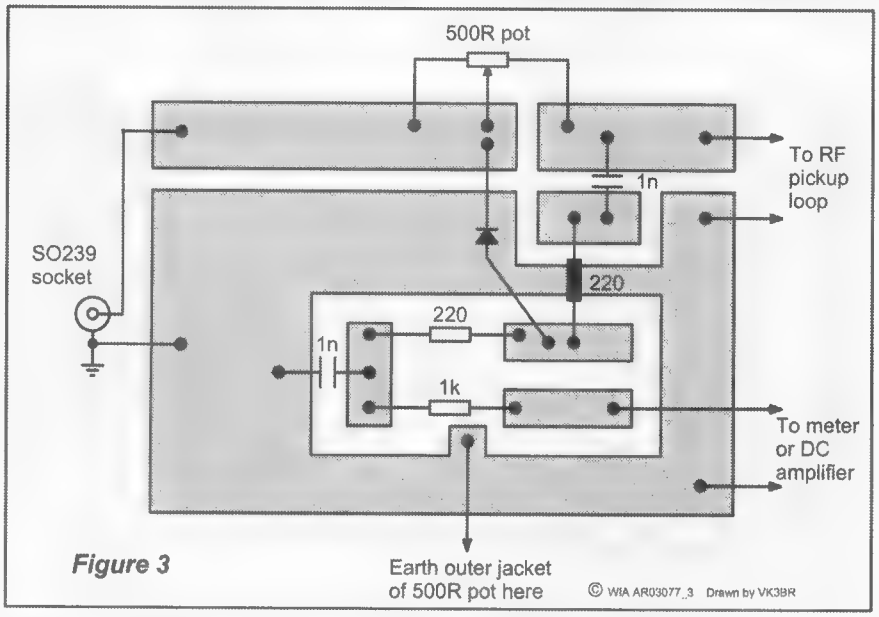

Figure 3

Know your second-hand equipment

Ron Fisher VK3OM.
ronlyn@nex.net.au. Phone 035944 3019.

This month I intend to look at a couple of popular transceivers, again from the Kenwood stable. The TS-120V/S and its later incarnation the TS-130V/S. But before going into detail I want to thank those readers who have been in touch with me. I have noted your suggestions and will act on them as soon as possible. By the way, don't think that I am only going to look at Kenwood. I have plans to discuss a couple of Yaesu models in the next instalment, so stand by.

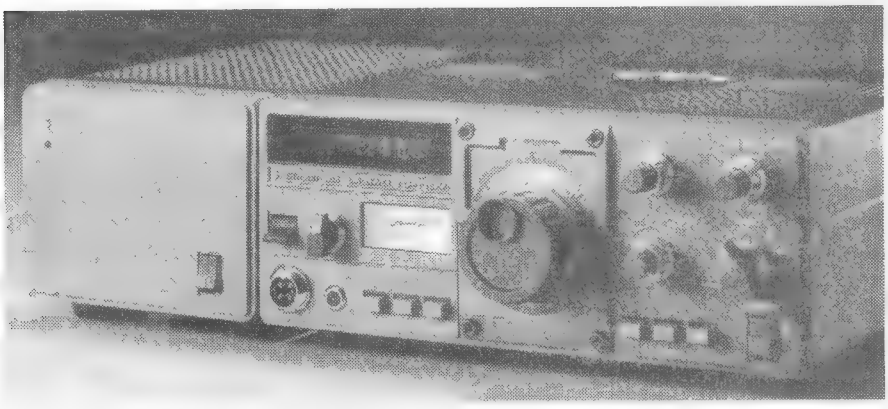

Photo 1 – A TS-120V with matching PS-20 power supply.

Please note that I am always happy to give my opinions on equipment either via email or on the phone. I prefer the phone, as it's easier to exchange ideas. My phone number is listed above. I am also happy to make skeds on any HF or VHF frequency. It's up to you.

The Kenwood TS-120 and TS-130 HF transceivers

As you can see from the illustrations, the two models look very much alike. So let's firstly look at what they have in common. They both come in two versions. The "S" runs 100 watt output, the "V" being the low power version with about 15 watt output. From this, you might think that the "S" version would be worth quite a bit more. Not so. The "V" versions are very popular with low power operators and often sell at a premium, particularly if they are in mint condition.

They require a 13.8 volt power supply with a four amp rating for the low power version and a twenty amp rating for the 100 watt model. Kenwood did produce matching power supplies for each, the PS-30 with 20 amp output and the PS20 with 4.5 amp output. They have both an analogue and a very clear digital frequency readout. This puts them in a class above the TS-520 that we discussed last time. They also have fully solid state final amplifiers, which require no tuning but do require a 50 ohm load with a low VSWR.

From the front, the "S" and "V" of both versions look identical but the rear tells the difference with the "S" sporting a very heavy heat sink and a cooling fan. However, a word of warning. A version of the TS-130S, labelled the TS-130SE, did not include a fan as standard. These are not very common, but a few do pop up from time to time. Some were later fitted with fans as an option but watch out. The fan is definitely a desirable thing to have. The "V" versions were not fitted with fans, which were not required with the lower power output.

Operating features included an illuminated "S" meter switchable from ALC to RF output on the "V" version or ALC to final current on the "S" version when in transmit mode. A very effective IF shift control gives excellent rejection against close-in interference. The RIT control gives a +/- shift of 2 kHz and has a red LED indicator to show when it is in use. There are separate RF and audio gain controls. One nice feature is that there is no frequency shift when changing sidebands. Quite a few contemporary transceivers required a retune of about 3 kHz when changing sidebands.

Now to the differences

The TS-120 only covered the old HF allocations from 80 to ten metre, whereas the TS-130 has those plus the WARC bands of 10, 18 and 24 MHz. Both, by the way, have a band-switch position for reception of WWV on 15 MHz, which is handy to check the calibration of the digital read-out. The TS-130 added a speech processor. This was a fairly simple audio compressor,

Photo 2 – A TS-130SE.

not up with the later RF clippers but nonetheless useful to have. It also had provision to install a narrow CW filter with front panel wide/narrow switching. Both models were fitted with an effective noise blanker and a receiver front end RF attenuator.

A few points to note

Both models have analogue VFOs so, of course, they do drift from switch on. However Kenwood VFOs were well designed and, after a 15 minute warm up, drift should not be a great problem. Expect to see around 300 Hz drift over the first twenty minutes Even some of the early synthesised transceivers were not completely stable. Early versions of the TS-120 had a few problems with instability in the RF driver and final stages; however, these problems should have been long fixed.

Watch that the meter and dial lights are working. It takes quite a while to replace them.

What are they worth?

Now down to the nitty gritty. What are they worth? First keep in mind that these transceivers are getting on to twenty five years old and some are now in deplorable condition. However, they were well built, so even rusty and battered versions might still be working fine.

I have seen battered TS120-S transceivers sell for under $200, but for one in excellent condition expect to pay around $275. For a TS-130S in very good condition expect to pay around $300 to $325. As mentioned earlier, a "V" version might sell for around the same figure. Overall condition is really the determining factor.

Several optional accessories were produced and these include an external VFO to allow split operation. This is the VFO-120. There was also a matching speaker, the SP-120, and two sets of headphones, the HS4 and the HS-5. A mobile mounting bracket, the MB-100, helped out with mounting the transceiver in the car. The supplied hand microphone was the MC-35S, a 50 kilohm unit with a selectable noise cancelling feature. Perhaps the most interesting of the options was the DFC-230. This allowed remote operation of the TS-130. These are scarce and not easily found.

These really are very nice little rigs, usable at home, mobile or portable. They have excellent receivers and the transmitters are capable of producing very good quality audio, particularly if you can find an MC-50 microphone to go with it.

Good luck with your hunting on the second-hand market. More in a couple of months.

ar

G&C COMMUNICATIONS

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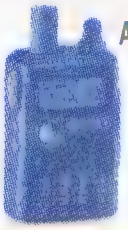
KENWOOD TH-F7E



Amateur VHF/UHF Transceiver

Freq: TX: 144-146 /430-440 MHz RX: 0.1-1300 MHz
Mode: TX: FM RX: AM/FM/SSB/CW
RF Power output: Hi: 5/5 W Lo: 0.5/0.5 W El: 50/50 mW
Volt: Int: 5-7.5 VDC External: 12-16
Weight: 250 gr (inc lith.-ion batt. pack)

ICOM

IC-208 Amateur VHF/UHF Transceiver

Freq: TX: 144-146 / 430-440 MHz RX: 118-1000 MHz
Mode: TX: FM RX: AM/FM
RF Power output: Hi: 50 / 50 W, Mid: 15 / 15 W, Low: 5 / 5 W
Voltage: 13.8 VDC
Weight: 1.2 Kg

IC-706 MkII Amateur HF/VHF Transceiver

Freq: TX: 10-160 m + WARC 50-54 / 144-146 (148) MHz Europe (USA) RX: 0.03-200 MHz all-mode incl WFM
Mode: AM/FM/SSB/CW/RTTY
RF Power output: 100/100/20 W

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VX-7R 5 W Ultra-Rugged, Submersible Tri-Band Magnesium Handheld

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TX : 50, 144, 430 MHz Amateur Bds
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Power Output: 5 Watts 222 MHz: 300 mW) 6 m AM: 1 W MANY GREAT FEATURES

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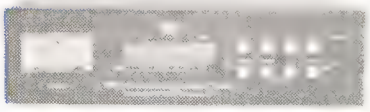
The auto MFJ 993



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HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

June 2004
T index: 40

Legend

Frequency scale: UD, E-MUF, OWF, F-MUF, ALF, >10%, >50%, >90%

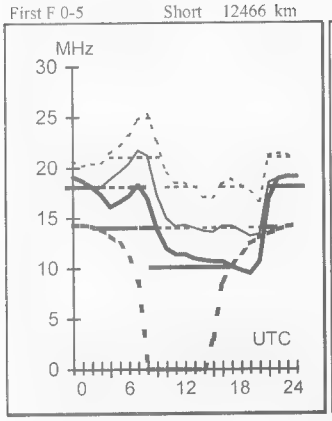
Time Scale

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

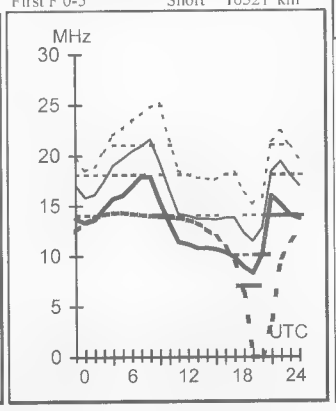
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

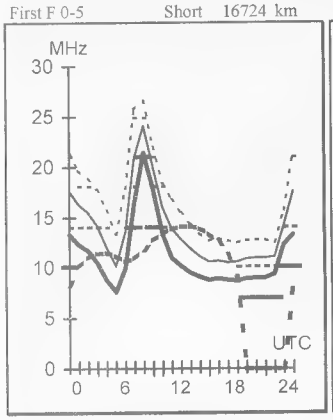
Adelaide-Anchorage 30
First F 0-5 Short 12466 km



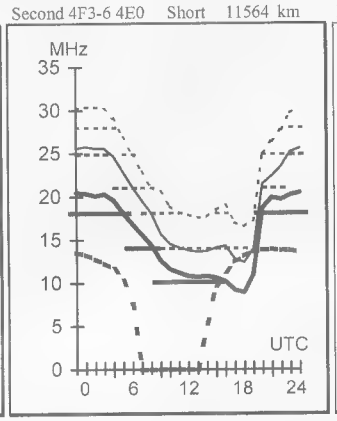
Brisbane-Berne 315
First F 0-5 Short 16321 km



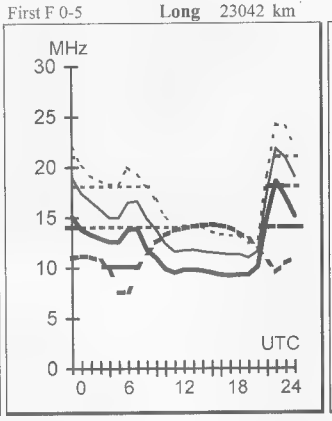
Adelaide-Dakar 233
First F 0-5 Short 16724 km



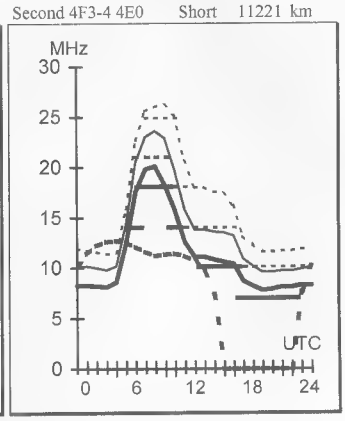
Brisbane-Los Angeles 59
Second 4F3-6 4E0 Short 11564 km



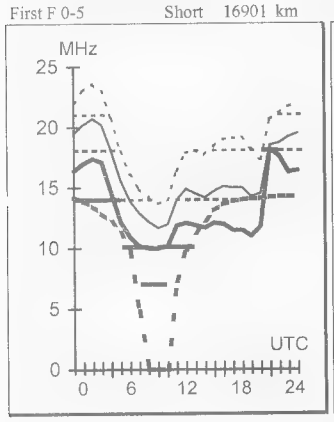
Canberra-London 136
First F 0-5 Long 23042 km



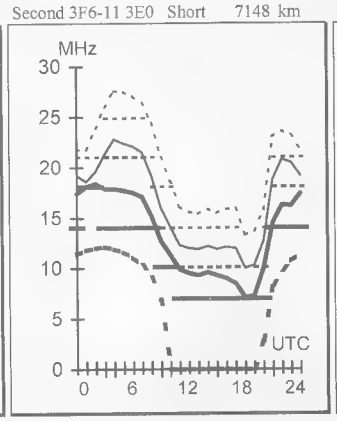
Darwin-Capetown 321
Second 4F3-4 4E0 Short 11221 km



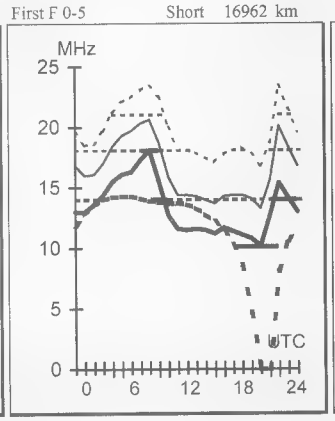
Adelaide-Ottawa 58
First F 0-5 Short 16901 km



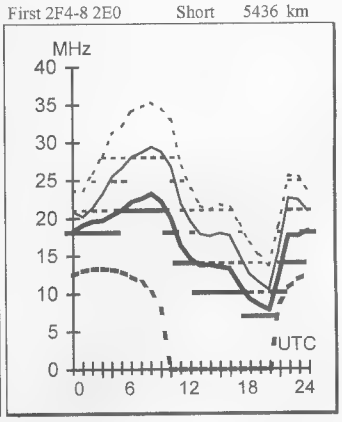
Brisbane-Osaka 344
Second 3F6-11 3E0 Short 7148 km



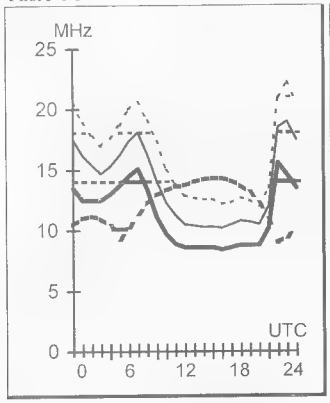
Canberra-London 316
First F 0-5 Short 16962 km



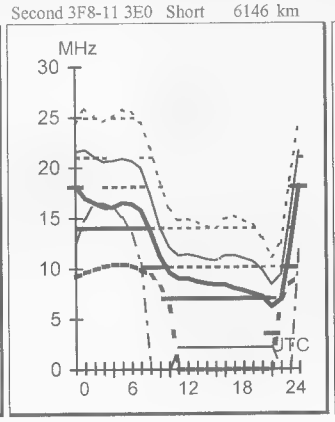
Darwin-Tokyo 10
First 2F4-8 2E0 Short 5436 km



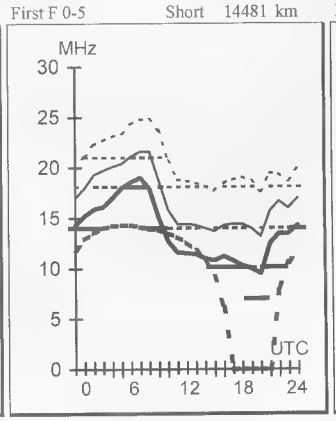
Adelaide-Stockholm 142
First F 0-5 Short 25029 km



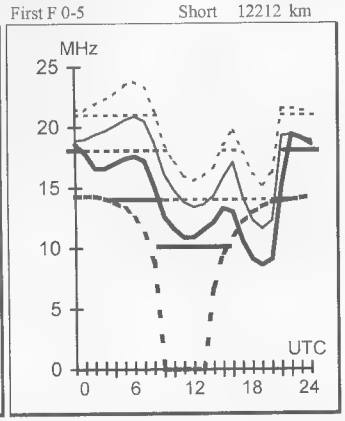
Brisbane-Singapore 293
Second 3F8-11 3E0 Short 6146 km



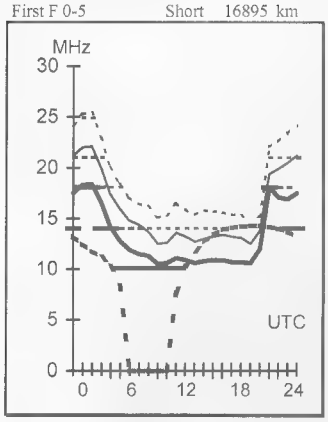
Canberra-London 317
First F 0-5 Short 14481 km



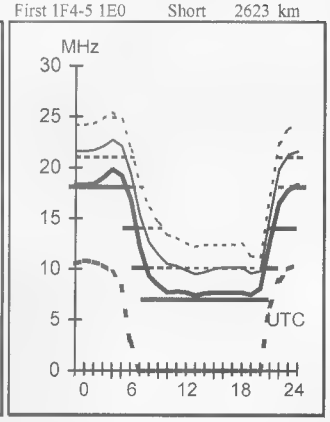
Darwin-Vancouver 42
First F 0-5 Short 12212 km



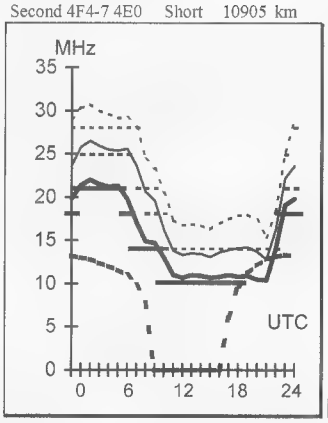
Hobart-Boston 78
First F 0-5 Short 16895 km



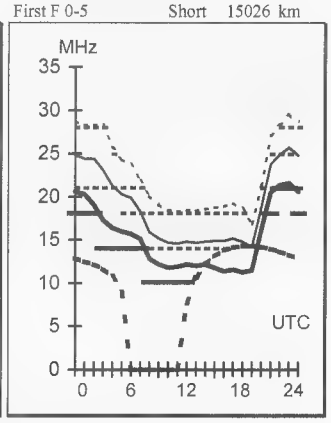
Melbourne-Auckland 97
First 1F4-5 1E0 Short 2623 km



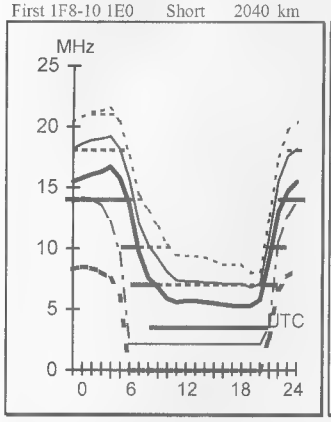
Perth-Honolulu 70
Second 4F4-7 4E0 Short 10905 km



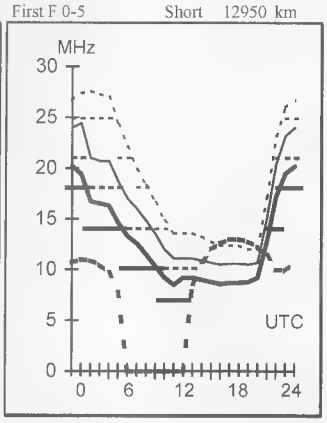
Sydney-Miami 86
First F 0-5 Short 15026 km



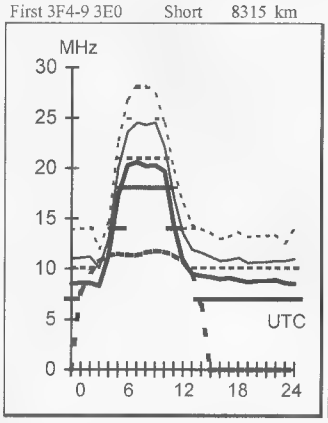
Hobart-Christchurch 101
First 1F8-10 1E0 Short 2040 km



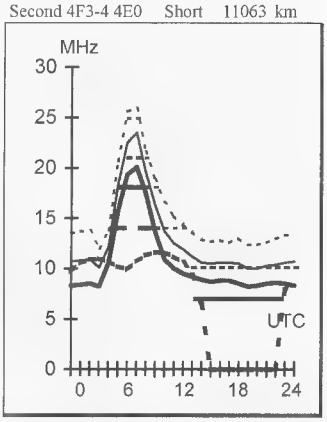
Melbourne-Lima 133
First F 0-5 Short 12950 km



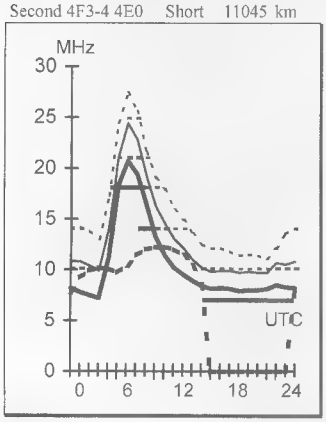
Perth-Johannesburg 248
First 3F4-9 3E0 Short 8315 km



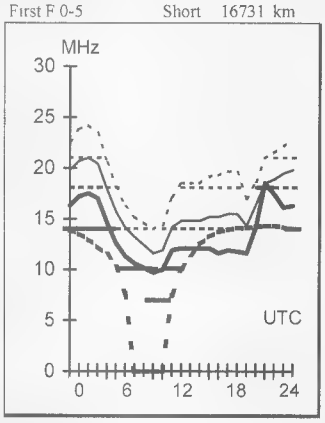
Sydney-Pretoria 230
Second 4F3-4 4E0 Short 11063 km



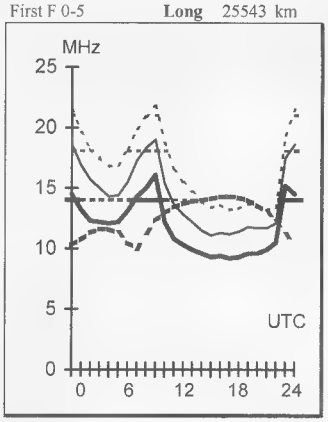
Hobart-Lusaka 239
Second 4F3-4 4E0 Short 11045 km



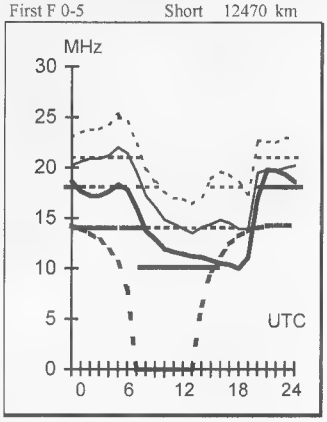
Melbourne-Montreal 62
First F 0-5 Short 16731 km



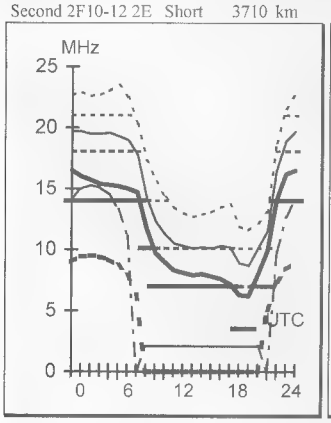
Perth-London 133
First F 0-5 Long 25543 km



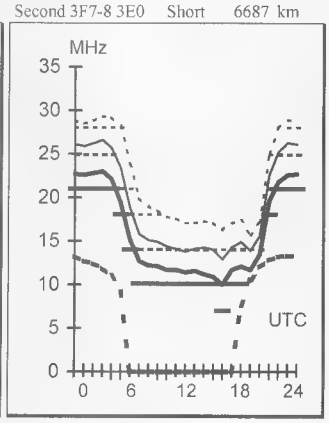
Sydney-Seattle 47
First F 0-5 Short 12470 km



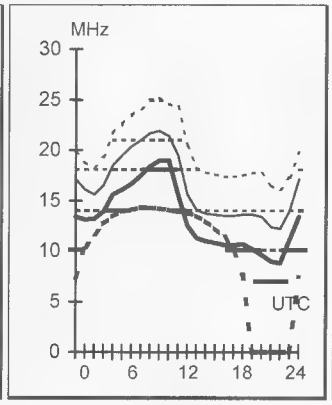
Hobart-Port Moresby 360
Second 2F10-12 2E Short 3710 km



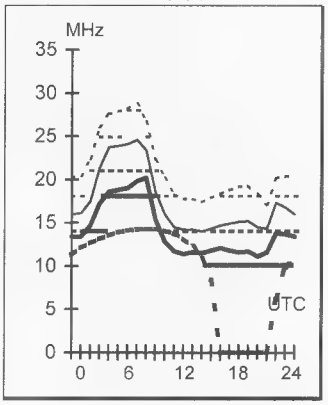
Melbourne-Papeete 90
Second 3F7-8 3E0 Short 6687 km



Perth-London 313
First F 0-5 Short 14481 km



Sydney-Tel Aviv 267
First F 0-5 Short 14173 km



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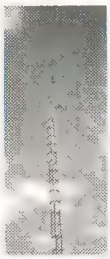

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VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR –vk2krr@telstra.com

Weak Signal

David Smith - VK3HZ

There's not been a great deal of long distance propagation to report about this month. Time to pull down the tower, clean the cobwebs out of the matching harnesses and get ready for the next season.

At the start of May, a high-pressure cell settled over the southeastern part of the country, giving some enhancement from Adelaide over to the east coast. On the evening of 5/5, Roger VK5NY worked Rob VK1ZQR along a difficult path over the mountains. Rex VK7MO/5 in Port Lincoln managed some good digital contacts into Melbourne and beyond. (More in the "Digital Modes" section.) Then on the morning of 6/5, VK5NY's keyer was heard at good strength by a multitude of stations in Canberra and Sydney, but no contacts resulted.

The morning activity (aircraft net) on 144.200 continues unabated with a number of stations (re)appearing with big signals. In particular, for the Melbourne stations, Chris VK2DO is putting a big signal into Melbourne on 2 m from his new QTH in the hills to the east of Canberra. Chris is currently "planting" a number of towers and so the signal could become even louder, and on higher bands, in the near future. Guy VK2KU is unpacking his station at his new QTH in QF55. He now has fewer neighbours and a good outlook to the east for EME. His path to VK3 is shielded by hills and so we in VK3 probably won't hear anything like the good signal that came from his old QTH.

The Wednesday evening net (144.150 at 2030 EST) run by Robbie VK3EK in Bairnsdale is attracting a larger crowd each week. Stations recently participating include VK3GOM and VK3KQB from Bendigo; VK3AXH, VK3IDL and VK3JTM from Ballarat/Ararat; VK3AJN, VK3KEG and VK3BG from northern Victoria; VK3XDK, VK3HZ and VK3AMD from Melbourne; and VK3ZYC, VK3RS, VK3WRE, VK3KAI, VK3HV, VK3YDK and VK3ZUX from the Gippsland area.

Russell VK3ZQB is testing new 70 cm and 23 cm beacons for Mt Gambier (VK5RSE) at the moment. All that is missing is a 10 W PA module for 23 cm. The current 70 cm beacon suffers from frequency stability problems, but is heard constantly in Melbourne – a distance of 410 km. Hopefully, the 23 cm beacon will also put out a strong signal.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital Modes

David Smith – VK3HZ

The usual contributor to this section of the column, Rex VK7MO, has been travelling back and forth across the south of the continent, creating the Digital Modes news for this month.

As advised last month, Rex travelled to Perth to give a presentation on "Weak signal DSP Techniques" to the WA VHF group, which, by all reports, was very well received – twice the normal turnout of people. At the same time, he was taking advantage of the Eta Aquarids meteor shower and attempting Meteor Scatter contacts back to the east from a number of locations, using his remarkably compact, but very capable, portable setup.

Based on the results of contacts on his outgoing trip, where he was getting strong, regular pings at 1800 km from Melbourne, Rex decided that, on his return trip, he would see how far he could achieve a contact. After Perth, he headed back to Bremer Bay on the south coast between Albany and Esperance – 2336 km from Melbourne – where he succeeded in working VK3HZ and VK3FMD. Following that success (at one stage, there were 4 strong "pings" within 10 minutes), Rex moved 115 km further west to Albany to the location used by Wally VK6KZ to set the world 10 GHz

Geoff Page VK2BQ

Geoff was born on 2nd May 1917 in Melbourne.

After army service he worked as a civil engineer for Lockhart and later Tumut councils.

It was while he was at Tumut that he obtained his amateur licence VK2BQ in 1950. Geoff moved to Melbourne in 1960 to work as site engineer for ESSO Oil.

While in Melbourne his callsign was VK3ABQ.

Geoff retired to Warrawee around the time Hornsby and Districts Amateur Radio Club, HADARC, was formed, so Geoff was an early member of the club and for many years was our auctioneer.

Geoff was a keen CW operator right up to the early 1990s.

Geoff was an early member of Australian Amateur Packet Radio Association, AAPRA, and was a committee member until his death. Geoff was a keen packet radio user and was publicity officer for AAPRA for most of the time.

Geoff had a sardonic sense of humor and always had a retort for any situation that arose. Geoff in the last year or two had heart problems and spent a few episodes in hospital.

Geoff is survived by his wife Thelma and two sons.

Barry White VK2AAB

VHF/UHF - An Expanding World *continued*

record. Unfortunately, nothing was heard from there despite 2 + hours of trying. With the help of local Wally VK6WG, Rex found another location, still 86 km further west than Bremer Bay, for another attempt. Here, he worked VK5DK and was heard by VK3FMD. He also received a ping containing "FMD". However, no contact was made back to Melbourne. It seems that there is a "brick wall" for Meteor Scatter at about the 2400 km mark. The contact from Bremer Bay to VK3HZ is a new national digital record for 2 m and is believed to be the furthest FSK441 digital contact ever achieved.

Rex headed back east with a number of goals in mind. One of those, to work into Sydney from VK6, was achieved at Eucla where he completed with VK2FZ and VK2FLR. From Eucla, he also worked VK7JG, back to the home state.

On 5/5, a stop at Port Lincoln coincided with very good conditions between SA and the eastern states. That evening, Rex worked a number of long distance tropo contacts using JT44, including VK3ZYC at Longford in eastern Victoria on 2 m, and VK3FMD and VK3HZ in Melbourne on 70 cm.

One of Rex's other goals was to work from Adelaide into Perth. Rex had stirred up quite a bit of enthusiasm for digital modes and both VK6AO and VK6HK were working him regularly, when he had the beam pointing that way. In Perth, Rex parked his setup near the QTH of Roger VK5NY at Mt Wilson and looked west for contacts. He completed with VK6AO – a distance of 2140 km – and was heard by VK6HK in a "burn" more than 20 seconds long. VK6KZ also received a number of pings. Hopefully, this will spur the Perth stations on to working into further locations like Mt Gambier, and perhaps Melbourne (although no pings were received from the VK6 stations during monitoring of the VK7MO/VK6AO QSO at this QTH).

Rex would like to thank the stations that he worked during his trip including: VK2KRR, VK2FLR, VK2TK, VK2FZ, VK2EAH, VK3FMD, VK3HY, VK3HZ, VK3ZYC, VK3AFW, VK3KAI, VK3UM, VK5DK, VK6AO, VK6HK and VK7JG.

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

2 & 70 FM DX has been very quiet during April, with only one opening in the south east and also north QLD coast.

On Wednesday morning 7th of April, good conditions were present in the south east of the country from around 6 am till almost 2 pm. This duct occurred the morning after rainfall across the SE area.

Conditions were very good from here across to Adelaide with good strong signals both 2 m and 70 cm main repeaters.

Interesting call in on the Willunga Hill 146.675 repeater, south of Adelaide. Stations copied were VK5ZK, VK5ZPS, VK5KBJ, VK5YX, VK5AUE and VK5ACY. It was good to hear VK5ACY back in there after a return trip from Hospital, hope you're recovering OK Bill.

Garry VK5ZK at Goolwa and myself tried simplex. Nice copy from Garry up to 4/5 on 146.500 and Garry was running only a 5/8th wave stick at 30 ft with 30 watt. Garry is 754 km from here.

Amazingly, conditions lasted till about 1.50 pm.

On Monday 12th April, Garry VK3KYF in Mildura was worked here at 5/7 on 146.500 @ 466 km.

Still deprived of much in the way of conditions, slight relief was provided for some VK4 operators on Monday evening the 19th of April. Mike VK4MIK at Butchers Creek, 60 km south of Cairns, was able to make it to the Townsville repeater VK4RAT where he was able to work Phil VK4JOK, Felix VK4FUQ and Garry VK4ADW. Mike had a good S8 signal from the repeater and Garry had a good S5 signal from Mike direct.

If you're looking for FM DX resources on the Internet, you may have noted the VK VHF FM DX Group website has not had an update for a while and the email group of the same name no longer exists. The site's activities have been incorporated into the Australian National VHF DX Group site www.users.bigpond.com/anvdg/. The existing FM DX email group has also been relocated to the ANVDG email group, which covers FM along with other modes. More details can be found on the website.

That's about it for this month. Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at vk2krr@telstra.com.

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• **Military type plugs and sockets** mostly made by **Cannon** MS-3102E 14S-6P 6 pin chassis mount plug. MS-3102E 14S-6S cord mounted socket with threaded ferrule, two or more of each required. Glen VK1GL Phone 02 6254 8002.

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• 2 off **Kuranishi model RW-100L** Thruline watt meters, dual meter, switchable bands 50/144/430 MHz 50 ohms, input 100 W or 20 W, output 20 W or 5W, N connectors, $95 each ono. **Homebrew Pi network antenna tuner**, rotary inductor with turns counter, slow motion tuning dials, $135 ono. Art VK2AS Phone 02 9416 7784.

• **2 m VK5 preamp,** type N connectors, $65 ono. **ICOM AG-35 70 cm preamp** type N connectors, $100 ono. **Oskerblock SWR 200** power SWR bridge, $125 ono. Two data switch boxes, one changeover, one 3 position, each $35. Art VK2AS Phone 02 9416 7784.

• **GME Electrophone TX-6000** x 2 (new cases), one wall plug charger and one spare battery pack. Excellent working order. $525. Geoff, VK2KPK. Phone 02 6845 4203

• 3 x **Morse keys** as follows: **Bug Hi-Mound BK100, straight YA1860 and Keyer, ARRL Iambic Accu.** Phone Herman VK2IXV Phone 02 4237 5201 email hermanw@smartchat.net.au

• **Linear Amplifier Kenwood TL922** Serial No.750092.Very little used, in fact the covers have never been off. Complete with manual. **HF Transceiver TS930S** Serial No. 2110680. In fine condition, serviced by Kenwood complete with operating AND service manuals, mike and power cable. **HF Transceiver YAESU FT101E** also in fine condition complete with manual, mike and power cable. Enquiries/offers to VK2MW Ian, phone 02 9488 5219

WANTED NSW

• **Copy of manual and/or circuit diagram Marconi LCR bridge type TF 2700** also **Rola filter choke type 14/60** replacement. S Dogger, 116 Tunnel Road, Stokers Siding 2484. Phone 02 6677 9292.

FOR SALE VIC

• **Transverter Microwave Mmodules MMT-144/28-R** 2 metre multimode 25 watt, $140. Adam VK3JRR QTHR Phone 03 5464 2214 AH.

• **ANTENNA 3 el 10 m Yagi** $80. David VK3MED 03 5952 5940.

• **Linear power amplifier for 144.000 - 148.000 MHz band, PV-85R**. Phone Terry VK3KBD 03 9315 0186 (evenings)

• **70cm Yagi Antenna ATN model 432-16LB** 16 el 17.2 dBi gain, 3.7 m boom c/w 1/4 wave sleeve balun, N conn.$60 Terry VK3ZXY QTHR Phone 03 9592 3514 email vh3zxy@leithy.com

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WANTED VIC

• **Battery box for TX475 Electrophone**. Either Ni-cad or dry cell type, or information where I can possibly find one would be appreciated. David VK3DBD QTHR Phone 02 6027 0570 email vk3dbd@rm.quik.com.au

FOR SALE QLD

IC-720A HF all band transceiver IC-PS20 AC Power supply YAESU receiver - FRG-100. MFJ Deluxe Versa Tuner II - MFJ-949B Regulated 13.8 VDC Power supply 2 amp continuous M9540 Kamoden 360-TRCX. Mob 0412 031 759 (Dec estate VK4CKF)

WANTED QLD

• **Manual (or copy) for HP audio oscillator type 208A**. All costs refunded. Gwen VK4CB QTHR Phone 07 3202 7137

• **RF HV capacitors**, suit medium power VHF tube amplifier tank circuit. Doorknob or similar type, 500 to 1500 pF, 5 kV min. Send size and ratings to Geoff VK4GWC, All costs covered. Phone 07 5445 9986, email geoffcom@powerup.com.au

WANTED WA

• **BWD 830 oscilloscope service manual** or copy, cost refunded. Jim VK6CA QTHR or Phone 08 9622 2804

MISCELLANEOUS

• **Elizabeth Amateur Radio Club Inc.** Collect your property! Do you have any property at the Club? Do you wish to donate these goods to EARC? Please reply ASAP to Secretary M V Millar VK5MX QTHR Callbook.

• **The WIA QSL Collection (now Federal) requires QSLs.** All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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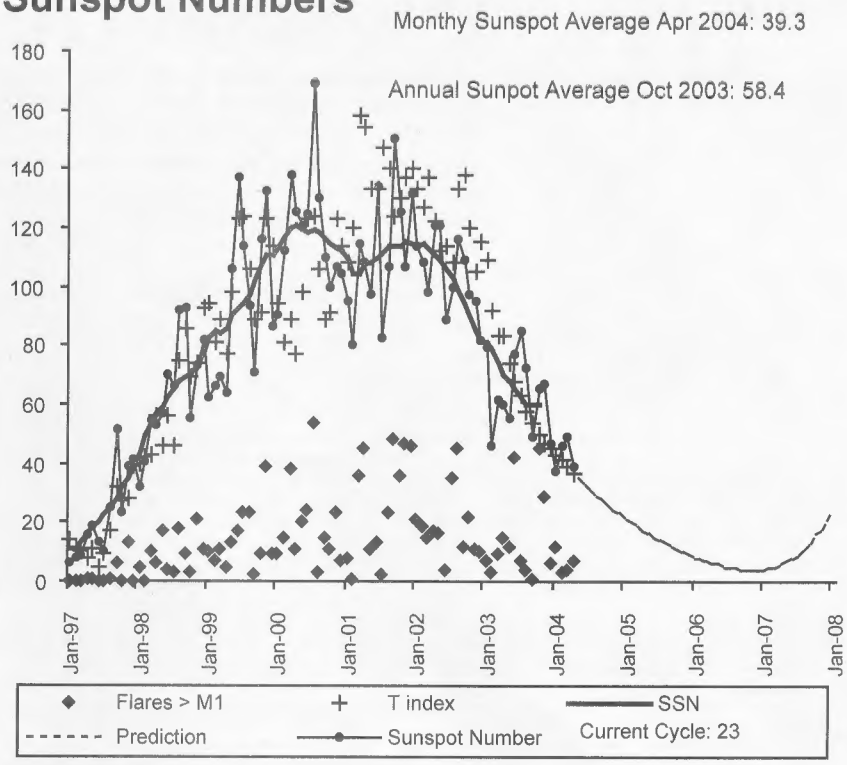

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Division Directory

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The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

Broadcast schedules All frequencies MHz. All times are local.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601

President	Alan Hawes	VK1WX
Secretary	Deane Walkington	VK1DW
Treasurer	Bob Howie	VK1HBH

VK1WI transmits each Thursday evening at 2000 hrs local time on VK1RGI 146.950 MHz and 438.375 MHz including the linked repeater system on VK2RGN Goulburn, VK2RHR High Range, VK2RMP Madden Plains and VK2RTW Wagga Wagga.
VK1 Home Page http://www.vk1.wia.ampr.org
Annual Membership Fees. Full $80.00 Pensioner or student $71.00. Without *Amateur Radio* $48.00

VK2 Division New South Wales
109 Wigram St, Parramatta NSW
(PO Box 9432, Harris Park, 2150)
(Office hours Tue., Thu., Fri., 1100 to 1400 hrs.)
Phone 02 9689 2417
Web: *http://www.wiansw.org.au*
Freecall 1800 817 644 (NSW only)
e-mail: *vk2wi@wiansw.org.au*
Fax 02 9633 1525

President	Chris Flak	VK2QV.
Secretary	Michael Corbin	VK2YC.
Treasurer	Noel May	VK2YXM

VK2WI transmits every Sunday at 1000 hrs and 1930 hrs on some or all of the following frequencies (MHz): 1.845, 3.595, 7.146, 10.125, 14.170, 18.120, 21.170, 24.950, 28.320, 29.170, 52.150, 52.525, 144.150, 147.000, 432.150, 438.525, 1273.500. Plus many country regions on 2m and 70cm repeaters. Highlights are included in VK2AWX Newcastle news Monday 1930hrs. on 3.593 , 10 metres and local repeaters. The text of the bulletins is available on the Divisional website and packet radio. Continuous slow morse transmissions are provided on 3.699 and 145.650. VK2RSY beacons on 10m, 6m, 2m, 70cm and 23cm. Packet on 144.850.
Annual Membership Fees. Full $83.00 Pensioner or student $66.00. Without *Amateur Radio* $50.00

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue 10.00 -2.30)
Phone 03 9885 9261
Web: *http://www.wiavic.org.au*
Fax 03 9885 9298
e-mail: *wiavic@wiavic.org.au*

President	Jim Linton	VK3PC
Secretary	John Brown	VK3JJB
Treasurer	Jim Baxter	VK3DBQ

VK3BWI broadcasts on the 1st Sunday of the month at 1030 and 2000 hours. Primary frequencies are 3.615, 7.085, 10.130, FM repeaters VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, VK3RMU 438.075. The broadcast can also be heard on the Saturday night at 2000 hours before the 1st Sunday. Major news appears on the packet radio network under the callsign VK3ZWI, and the WIA Victoria website.
Annual Membership Fees. Full $87.00 Pensioner or student $72.00. Without *Amateur Radio* $55.00

VK4 Division Queensland
PO Box 199, Wavell Heights, Qld. 4012
Phone 07 3221 9377
e-mail: *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web: *http://www.wia.org.au/vk4*

President	Ewan McLeod	VK4ERM
Secretary	Bob Cumming	VK4YBN
Treasurer	David Gulley	VK4DCG

EVERY SUNDAY, at 9am LOCAL (Sat 2300 UTC). From Far North Queensland On 7.070/2 MHz. From South East Queensland:- 1.825, 3.605, 7.118, 10.135, 14.342, 21.175, 52.525, 147.000, 438.500 MHz. Right throughout VK4 scan 146.6 to 148.0 MHz again at 9am local. SUNDAY 6:45pm hear LAST week's QNEWS broadcast 3.605 and 147.0 MHz from South East Queensland. MONDAY 7:00pm hear YESTERDAY's news again on 146.875 MHz broadcast from Brisbanes Bayside repeater, and then 7:30pm on 3.605 and 147.0 MHz from Sth East Queensland. Text editions on packet internet and personal email, visit www.wia.org.au/vk4 News is updated 24/7 in both text and audio on this site. MP3 Audio from same website by 2300 hours each Saturday. Contact QNEWS, packet sp QNEWS@VK4WIE.BNE.QLD.AUS.OC email qnews@wia.org.au
Annual Membership Fees. Full $95.00 Pensioner or student $81.00. Without *Amateur Radio* $63.00

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web:*http://www.sant.wia.org.au*
email: *peter.reichelt@bigpond.com*

President	Trevor Quick	VK5ATQ
Secretary	Peter Reichelt	VK5APR
Treasurer	Trevor Quick	VK5ATQ

VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
Annual Membership Fees. Full $91.00 Pensioner or student $76.00. Without *Amateur Radio* $61.00

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web: *http://www.wia.org.au/vk6*
e-mail: *vk6@wia.org.au*

President	Neil Penfold	VK6NE
Secretary	Roy Watkins	VK6XV
Treasurer	Bruce Hedland-Thomas	VK6OO

VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website
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VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.wia.org.au/vk7*
email: *vk7dg@wia.org.au*

President	Phil Corby	VK7ZAX
Secretary	Dale Barnes	VK7DG
Treasurer	Dale Barnes	VK7DG

VK7WI: At 0930 hrs every Sunday on 146.700 MHz FM (VK7RHT, Hobart) and relayed on 147.000 MHz FM (VK7RAA, Launceston), 146.625 MHz FM (VK7RMD, Ulverstone), 146.750 MHz FM (VK7RNW, Ulverstone), 147.075 MHz FM (VK7RWC, Rosebery), 3.57 MHz LSB, 7.090 MHz LSB, 14.130 MHz USB and UHF CB Channel 15 in Hobart area.
Annual Membership Fees. Full $90.00 Pensioner or student $77.00. Without *Amateur Radio* $57.00

VK8 Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz. The broadcast is downloaded via the Internet.

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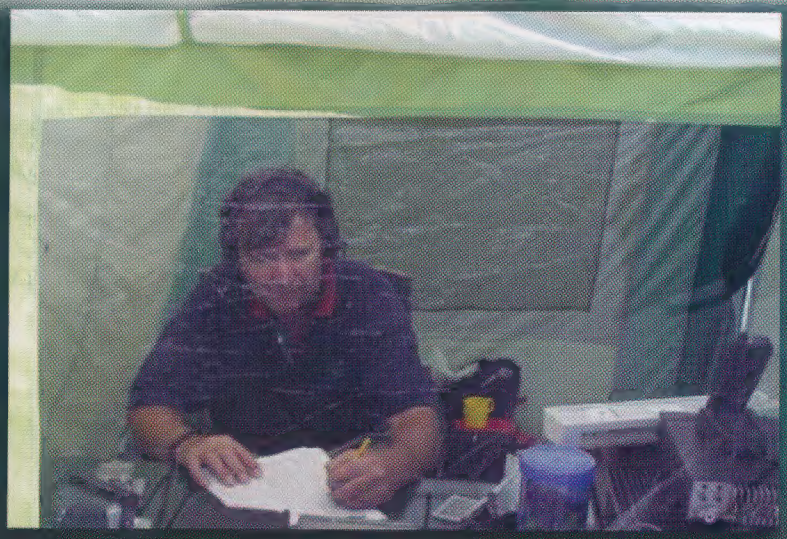
Waldegrave Islands IOTA OC–261

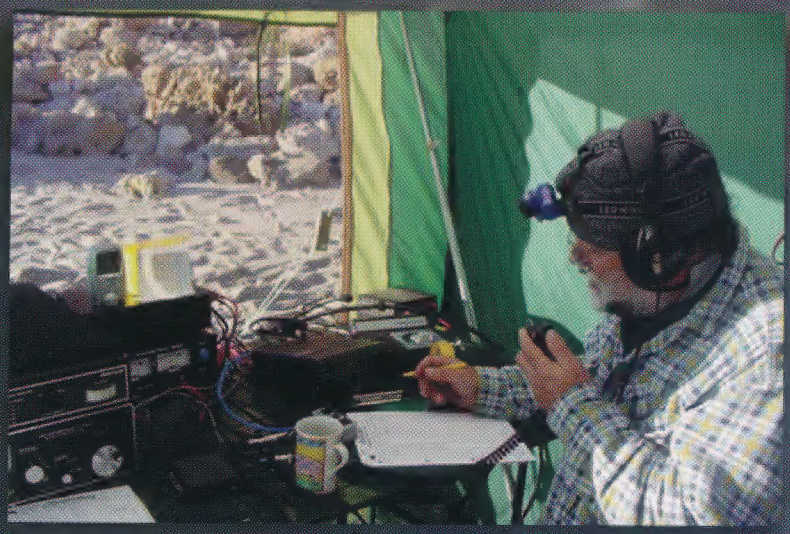
April 17 to 21, 2003

By Peter Forbes, VK3QI

The team on the beach with the Hy-Gain AV-640 Vertical



VK3WWW with the paper work



VK3ZZ working the DX

AFTER OUR SUCCESSFUL and exciting OC-251, Lady Julia Percy Island operation of September 2002. Tom VK3ZZ and I scanned the IOTA directory. In southern Australia. We found two groups, one in far eastern Western Australia and the other South Australia State West Centre. The only problems were the distance to the area from Victoria (VK3) — 1400 kilometre plus — and the small amount of information on the area.

Waldegrave Islands were chosen as the most accessible in the SA group. A Conservation Park, the islands lie some 3 kilometres off the coast and are separated by a body of water that can be very rough at times. East Island is the larger. It is 9 kilometres in circumference, relatively flat on top, with saltbush vegetation and drifting sand and a 25 metre high sandstone cliff almost entirely around its edge. There are three beach areas where one can land and each has a small area near the cliff face, which remains dry at high tide. The day we arrived there was a good 3 metre swell running, with spectacular waves crashing onto the southern end of the island. We chose an area at the north end with a beach landing, sheltered from the prevailing south-westerly swell.

Jeff Grocke chose an area, which was absolutely perfect for our operation...

see page 4 for the rest of our story.

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Venue: South East Radio Group Convention 2004
Pick Ave Showground, Mt. Gambier, SA
Date: 12-13th June 2004

Venue: Far North & North QLD Amateur Radio Get Together
Beachcomber Coconut Village, South Mission Beach,
Far North QLD **Date:** 12-13th June 2004

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